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The influence of program participation in business education courses on standardized test performance among secondary students in Louisiana

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THE INFLUENCE OF PROGRAM PARTICIPATION IN
BUSINESS EDUCATION COURSES ON STANDARDIZED TEST PERFORMANCE
AMONG SECONDARY STUDENTS IN LOUISIANA

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirement for the degree of
Doctor of Philosophy

in

The School of Human Resource and Workforce Education

by
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May 2010

DEDICATION

Through Christ, All things are possible.

I would like to dedicate this dissertation to my family, especially my parents, for your love and support and for instilling in me the importance of working hard and securing an education. Daddy, even though you are not here, your presence is felt.

ACKNOWLEDGEMENTS

Thanks to my mom and my sisters for your continued love, support and encouragement in life and especially during this process.

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ABSTRACT

The primary purpose of this study was to compare the academic achievement, as measured by scores on the English and math portions of the Graduate Exit Examination (GEE), of public high school students in Louisiana by whether or not they were identified as business education students. The GEE is a high-stakes test that is administered to high school students in Louisiana. Students must pass specific portions of the test to obtain a diploma. Academic achievement data on the GEE was obtained from the Louisiana Department of Education.

The sample for the study was all 10th and 11th grade students enrolled in public high schools in Louisiana during the 2008-2009 school year who were initial testers and who were not classified as “special education,” “504,” or “Limited English Proficiency.” Data acquired from the Louisiana Department of Education was recorded in a computerized recording document.

Academic achievement, as measured by math and English scores on the GEE, was described and correlated with selected demographic characteristics. In addition, achievement was compared by whether or not the students were classified as a business education student.

Demographic findings of the study showed that the largest groups of subjects were of the White race and female gender. In addition, more students were found to be in the socioeconomic group that was defined by receiving free lunch in school.

Findings of the study indicated that business education students scored higher than non-business education students on all math and English measures examined. Additionally, business education students were found to have achieved at higher GEE classifications than non-business education students in both English and math areas.

The researcher concluded that business education students perform better academically than non-business education students. Another conclusion of the study was that business education is no longer a female dominated program.

The researcher recommended that state level administrators of educational programs in Louisiana develop new courses that would integrate academics and business education courses that would be approved for high school graduation credit. Some of these courses might include: business technical writing, applied mathematics, applied technology, research in careers and math for business decisions.

CHAPTER 1

INTRODUCTION

It has often been said that, “Education is the key to success” and that “Knowledge is power.” Having the ability to understand, acquire, and apply that which has been learned for a purpose exhibits cognitive functions. Education is not only important to the individual but to the society as a whole. An educated society promotes a skilled workforce. However, today’s society is in the midst of a recession. Families are tightening their budgets and companies are downsizing on every level. Nevertheless, education is an area that should not be taken lightly or be a part of any “budget cuts.”

The American Education system has experienced and continues to experience numerous changes over the years. In addition, there has been much debate and public scrutiny in regards to the effectiveness of public education. Throughout history, especially in the United States, education reformation has been at the forefront. Individuals argue that the public school system is not doing such a good job in preparing young people for the future and to compete with students in other countries. As a result of this view, much legislation and numerous programs have been implemented to improve the public school system. In 1983, under President Reagan’s administration, *A Nation at Risk* was introduced in 1987 followed by *America 2000* and *Goals 2000* under the administration of President Clinton. In 1987, under the middle and high school initiative, *High Schools That Work* was launched. *The Carl D. Perkins Vocational and Applied Technology Education Act of 1990* placed emphasis on Tech Prep, and was amended in the *Schools to Work Opportunities Act of 1994*. In 2001, under the administration of President George Bush, the *No Child Left Behind Act* was passed which is geared towards teacher quality and student performance. In 2006, *The Carl D. Perkins Vocational and Technical Education Act*

provided for an increased focus on the academic achievement of career and technical education students, strengthening the connections between secondary and postsecondary education, and improving state and local accountability (United States Department of Education, 2007).

For several years now, throughout the United States, much discussion has taken place regarding rigorous curriculums, accountability, and increased standards for public school systems. As a result, graduation requirements have increased and high-stakes tests implemented in order to earn a high school diploma.

The rationale for high-stakes testing is that the promise of rewards and the threat of punishments will cause teachers to work more effectively, students to be more motivated, and schools to run more smoothly — all of which will result in greater academic achievement for all students, but especially those from poverty and minority backgrounds (Nichols & Berliner, 2008, p. 672).

According to Nielson 1985, (as cited by Harvey & Koch, 2004), “High-stakes tests are often the most visible indicator of successes and failures for students, parents as well as the community.” Measures that are typically used and easily measured as a means of accountability are most often in the form of assessments. Assessments are often used as prerequisites to secure employment and for college entrance. According to Lewis (2000), “assessments are necessary for a variety of purposes — public accountability, diagnosis of student strengths and weaknesses, and evidence for teachers and parents that students are learning what they should” (p. 3). To date, many states have mandated assessments for this purpose. Louisiana is one of the many states that administer high-stakes tests to students who attend public schools. The Louisiana Educational Assessment Program (LEAP) is administered to 4th and 8th grade students and the Graduate Exit Examination (GEE) is administered to 10th (English and math portions) and 11th grade students (science and social studies portions). These assessments are designed to assess how well students have mastered the state content standards. More specifically, the LEAP test measures whether or not students have sufficient skills and knowledge to advance to the next grade. In addition, the GEE

test requires high school students to demonstrate adequate information and skills to be eligible for a high school diploma. Students who do not pass the first time have multiple times to retake the test. The English Language Arts tests at grades 4, 8, and 10 encompass writing, using information resources, reading and responding, and proofreading (Louisiana Educational Assessment Program LEAP/GEE Education Annual Report, 2006-2007). The math tests encompass number and number relations, algebra, measurements, geometry, data analysis, probability and discrete math, patterns, relations, and functions (Louisiana Educational Assessment Program LEAP/GEE Education Annual Report, 2006-2007). The Louisiana Educational Assessment Program LEAP/GEE Annual Report (2006-2007) states that these tests:

1. by law, are aligned with state content standards;
2. by law, must be as rigorous as those of the National Assessment of Educational Progress (NAEP); and
3. ...allow students to receive one of five achievement ratings on these test:
Advanced: A student at this level has demonstrated superior performance beyond the level of mastery;
Mastery: A student at this level has demonstrated competency over challenging subject matter and is well prepared for the next level of schooling;
Basic: A student at this level has demonstrated only the fundamental knowledge and skills needed for the next level of schooling;
Approaching Basic: A student at this level has only partially demonstrated the fundamental knowledge and skills needed for the next level of schooling; and
Unsatisfactory: A student at this level has not demonstrated the fundamental knowledge and skills needed for the next level of schooling (Introduction, p. 1, ¶ 4).

“As a society, we ask a lot of our schools” (Plank, 2001, p. 279). The public expects high school students to be prepared to compete in this ever-changing society, either ready to enter the workforce or to attend an institution of higher learning. To be eligible for a high school diploma in the state of Louisiana, students must earn a minimum of twenty-three credits to include four units of English, three units of math, three units of science, three units of social studies, one-half unit of health, one and a half units of physical education, and eight electives (Louisiana Department of Education Website, 2008, No. 2319, Part E). To be eligible for a career and

technical education endorsement, students must complete four elective credits in an area of concentration approved by the Board of Secondary Education (BESE) and two related elective credits. In addition, they must have a specific grade point average and ACT score, obtain an industry-based certification or 3 college hours in a career and technical education (CTE) area articulated to a postsecondary institution, and a minimum of 90 hours of work-based learning experience [paid or non-paid] (Louisiana Department of Education, 2008, BESE Policies/Bulletins page, Bulletin 118).

Career and technical education (CTE), formerly known as vocational education, has been for many years, a very important part of the American educational system. Over the years, it has prepared many students with skills to obtain employment during or after high school. It is designed to aid individuals find skills, purpose, and direction in their lives through classroom instruction and, often times, on-the-job training. Decades ago, the idea of vocational education was to prepare young people for entry-level positions specifically in one area, but that is no longer true. Career and technical education courses are considered elective classes and are a fundamental part of the high school curriculum including cooperative education programs which provides for supervised work experience.

“What sets CTE apart from the other academic areas is its focus on the application of knowledge and the creation of in-depth understanding to solve problems” (Drage, 2009, p. 34). General areas of career and technical education include agricultural education, business education, family and consumer sciences education, health occupations education, marketing education, technology education, and trade and industrial education (Louisiana Department of Education, 2008, Career and Technical Education page, Links to Program Areas of CTE).

According to the Association for Career and Technical Education website (2009), today’s CTE provides students:

- academic subject matter taught with relevance to the real world;
- employability skills, from job-related skills to workplace ethics;
- career pathways that link secondary and postsecondary education;
- second-chance education and training; and
- education for additional training and degrees, especially related to workplace training, skills upgrades and career advancement (CTE Information and Research page, ¶ 1).

High school career and technical education courses are designed to prepare students to acquire skills and knowledge necessary to gain employment. These types of programs offer students an opportunity to apply theory in practical ways often through project and problem based learning. Students elect to take these types of courses. Many CTE courses offered in secondary programs require students to exhibit higher level thinking skills, technical skills, and academic skills. Often, the skills that are acquired are imperative for future careers but not necessarily tested on high-stakes tests. “Career and Technical Education, because of its ability to engage students hands-on, has long been thought to have a role in reducing dropout rates among high school students” (Stone & Alfeld, 2004, Article 3, ¶ 2). “Research shows that as contextually and project-based disciplines, business education and career and technology education improves student learning and increases student achievement” (Glenn, 2005, p. 85). According to Lynch, (2000), most students benefit from learning material in the context in which it will be used. “Most students need context to understand, learn, and remember” (Contextual Teaching and Learning section, ¶ 1).

Vocational education enrollments decreased between 1982–1994 (Lynch, 2000). Lynch (2000) indicated that some reasons for this decrease were due to: (a) programs not meeting the needs of students, employers and community, (b) a shrinking population, (c) a negative image, (d) programs targeted to educationally disadvantaged students, and (e) much confusion regarding school-to-work programs. As a result, many programs have continued to dwindle because of increased core academic course requirements.

One of the seven CTE areas is business education. “Business Education in Louisiana is a broad, comprehensive curriculum that prepares students to become productive citizens in a global economy” (Louisiana Department of Education website, 2008, Business Education Overview section, ¶ 1). High school business education courses are designed to prepare students to “gain a wide range of transferable skills that allow entrance into the job market, with the flexibility to function in new and emerging technological occupations” (Louisiana Department of Education Website, 2008, Business Education Overview section, ¶ 1).

Students enrolled in business courses are provided an opportunity to demonstrate knowledge and competencies acquired in a specific area by obtaining an industry-based certification. As a curriculum that “consistently incorporates core academic skills, business education-i.e., learning about business-is inherently academic, offers core content, and provides good preparation for college” (Glenn, 2005, p. 8).

According to an article published, *A Review of High Stakes Testing: Who is Smarter – Academic or Vocational Students?*, CTE students in Arizona scored lower than other students on a high-stakes test. It was determined that after removing influences and extraneous variables (i.e. handicapped, LEP, economically and academically disadvantaged) “no difference was found between the two groups” (Elliot, 2001, p. 1). However, no logical association had been identified by whether or not students completed business education. Therefore, the primary purpose of this study is to compare the academic achievement, as measured by scores on the English and math portions of the Graduate Exit Examination (GEE), of high school students in Louisiana by whether or not they are identified as a business education student.

Objectives

Specific objectives formulated to guide the researcher include:

1. To describe 10th and 11th grade students in Louisiana enrolled in regular education programs completing the math and English portions of the GEE on the following characteristics:
 - a. Age;
 - b. Grade level;
 - c. Gender;
 - d. Race;
 - e. Socioeconomic status as measured by lunch prices (free, reduced or paid); and
 - f. Business education students or non-business education students.
2. To describe 10th and 11th grade students in Louisiana enrolled in regular education programs on their math and English achievement as measured by scores and sub-scale scores on the GEE.
3. To compare 10th and 11th grade students in Louisiana enrolled in regular education programs on the following selected demographic characteristics by whether they are identified as a business education student:
 - a. Age;
 - b. Grade level;
 - c. Race;
 - d. Gender;
 - e. Socioeconomic status as measured by lunch prices (free, reduced or paid); and
 - f. Business education students or non-business education students.
4. To compare 10th and 11th grade students in Louisiana enrolled in regular education programs on their math and English achievement as measured by scores and sub-scale scores on the GEE by whether they are identified as a business education student.

5. To determine if a model exists explaining a significant portion of the variance in the GEE math and English scores and sub-scale scores of 10th and 11th grade students in Louisiana enrolled in regular education programs from the following characteristics (see Figure 1):
- Age;
 - Grade level;
 - Gender;
 - Race;
 - Socioeconomic status as measured by lunch prices (free, reduced or paid); and
 - Business education students or non-business education students.

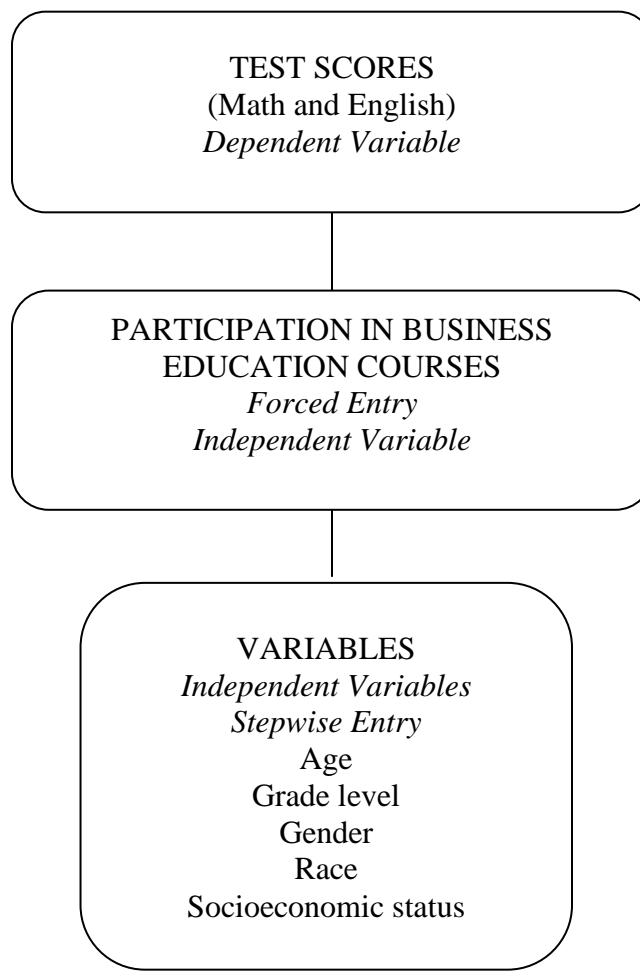


Figure 1: Research Model

Definitions

For the purpose of this study, the researcher has operationally defined or cited a definition for each of the following terms:

Cited Definition

- a. Business education – Business Education in Louisiana is a broad, comprehensive curriculum that prepares students to become productive citizens and lifelong learners in a global economy. It provides students with meaningful instruction that is flexible and adaptable to the needs of industry and society (Louisiana Department of Education, 2009, Business Education Overview section, ¶ 1).

Operational Definitions

- b. 504 – a student with one or more disabilities
- c. Age – at the time of testing, identified in years
- d. BESE – acronym for the Board of Elementary and Secondary Education
- e. Business Education Student – a student who has taken or was enrolled at the time of testing in one of the following courses (as indicated as secondary business education courses by the Louisiana Board of Elementary and Secondary Education, Business Education Course Descriptions, n.d.):
 - Accounting I & II
 - Administrative Support Occupations
 - Business Communication
 - Business Computer Applications I & II
 - Business English
 - Business Law
 - Computer Multimedia Presentations

- Computer Technology Literacy
 - Cooperative Office Education
 - Desktop Publishing
 - Education for Careers
 - Financial Math
 - Internship (Business)
 - Introduction to Business Computer Applications
 - Keyboarding/Keyboarding Applications
 - Principles of Business
 - Principles of Marketing
 - Telecommunications
 - Web Design
 - Word Processing
- f. CTE – acronym for Career and Technical Education (formerly known as vocational education)
- g. CTE Student – a student who is currently enrolled in a career and technical education course or one who has taken one or more career and technical education courses (i.e. agriculture, adult responsibility, principles of marketing)
- h. ELA – acronym for English Language Arts
- i. GEE – acronym for Graduate Exit Exam (Examination); high-stakes test administered to 10th and 11th grade students in the state of Louisiana
- j. Gender – female or male
- k. Grade level – grade classification at the time of testing

- l. HST – acronym for High-Stakes Testing; standardized testing as a result of the NCLB Act
- m. HSTW – acronym for High School That Works
- n. LDOE – acronym for Louisiana Department of Education
- o. LEAP – acronym for Louisiana Educational Assessment Program administered to 4th and 8th grade students in the state of Louisiana
- p. LEP - acronym for Limited English Proficiency
- q. NCLB – acronym for No Child Left Behind (Act)
- r. Race – racial classification (American Indian, Asian, Black, Hispanic, and White)
- s. Socioeconomic Status – determined by lunch prices (free, reduced or paid)
- t. Vocational Education Programs (currently known as CTE programs) – programs that prepare students for gainful employment in vocational areas (agriculture, business, family and consumer sciences, health occupations, marketing, technology, trade and industrial education)

CHAPTER 2

REVIEW OF LITERATURE

The History of Vocational Education

Charles Prosser (1871-1952) and John Dewey (1859-1952) are two men well known to the vocational education field. The two had opposing views but both were instrumental in making progress in the field of vocational education. Prosser, one of the authors of the Smith-Hughes Act, is credited for the leadership development of vocational education in the United States and is often referred to as the father of “vocational education.” He was an advocate of dual educational systems (vocational and academic tracks). On the other hand, John Dewey believed that students should have real world experiences or practical applications and opposed any type of education that segregated students into tracks. In most state educational systems in the United States, Prosser’s school of thought prevails.

Vocational education is often viewed as a track to prepare students for a specific trade or vocation. Whether at a middle school, a comprehensive high school, or a technical college, real-world training has always been a part of vocational programs. Career and Technical Education programs, formally vocational education, “exist in the United States because of federal legislation” (Rojewski, 2002, p. 2). In 1862, the *Morrill Act* was signed into law establishing new land grant colleges that focused on mechanical and agricultural arts. In fact, since the beginning of federal support for public career and technical education as mandated by the *Smith-Hughes Act of 1917* (PL64-347), “the federal government has been a predominant influence in determining the scope and direction of secondary, and to a lesser extent postsecondary, career and technical training” (Rojewski, 2002, p. 2). In 1983, under President Reagan’s administration, *A Nation at Risk*, a report on American education, was introduced. This report addressed American failing schools and recommended that:

1. State and local high school graduation requirements be strengthened and that, at a minimum, all students seeking a diploma be required to lay the foundations in the Five New Basics by taking the following curriculum during their 4 years of high school: (a) 4 years of English; (b) 3 years of mathematics; (c) 3 years of science; (d) 3 years of social studies; and (e) one-half year of computer science. For the college-bound, 2 years of foreign language in high school are strongly recommended in addition to those taken earlier.
2. Schools, colleges, and universities adopt more rigorous and measurable standards, and higher expectations, for academic performance and student conduct, and that 4-year colleges and universities raise their requirements for admission. This will help students do their best educationally with challenging materials in an environment that supports learning and authentic accomplishment.
3. Significantly more time be devoted to learning the New Basics. This will require more effective use of the existing school day, a longer school day, or a lengthened school year.
4. To improve the preparation of teachers or to make teaching a more rewarding and respected profession; and
5. Citizens across the Nation hold educators and elected officials responsible for providing the leadership necessary to achieve these reforms, and that citizens provide the fiscal support and stability required to bring about the reforms we propose (A Nation At Risk: The Imperative For Educational Reform, 1983, Recommendation A: Content section, ¶ 1).

The *Carl D. Perkins Vocational Act of 1984* mandated the integration of academics and CTE (vocational education). By doing so, students are provided knowledge and workplace relevance needed to become productive citizens in today's society.

In 1987, President Clinton, signed into law, *Goals 2000* in which:

Goals 2000: Reforming Education to Improve Student Achievement looks at how Goals 2000 supports State efforts to develop clear and rigorous standards for what every child should know and be able to do, and supports comprehensive state- and district-wide planning and implementation of school improvement efforts focused on improving student achievement to those standards (U.S. Department of Education, Goals 2000 Legislation and Related Items page, 1998, ¶ 1).

Also in 1987, under the middle and high school initiative, *High Schools That Work* (HSTW) was launched. According to Flowers (2000), “the primary goal of the HSTW program is to improve reading, mathematics, science, technical, and problem solving abilities of vocational students” (Introduction section, ¶ 3).

Vocational education has experienced numerous changes since the early 1900's and continues to do so today. The world is changing and so is vocational education in the 21st century. Today, vocational education courses are offered at the secondary, postsecondary and university levels. In the broadest sense, all fields of study are vocational especially if a student will use the skills and knowledge attained in the study to make a living sometime in the future (Dumas & Beckner, 1968). According to Palmer and Gaunt (2007), "vocational education has often been considered as the track for low-achieving and non-college bound students" (p. 35). Stone 1993 (as cited by Wonacott, 2000), state that "perhaps the most enduring belief about vocational education is that it's only for the noncollege bound, the potential dropouts, or other students with special needs" (Voc Ed Is for Dummies and Misfits section, ¶ 1). Secondary vocational education continues to suffer from a negative image among students, parents, educators, and policymakers (Wonacott, 2000) The public image of vocational education is often painted to be that of a dumping ground for problem and or disadvantaged students (Cohen & Besharov, 2002). Vocational education students are often identified or associated with various influences (single parent homes, low socioeconomic status, poor and non-supportive home environment) as to why they are underachievers or low achievers.

In 1990, the *Carl D. Perkins Vocational and Applied Technology Education Act* of 1990 placed emphasis on Technical Preparation (Tech Prep) which was amended in the *Schools to Work Opportunities Act of 1994*. In 1995, *Tech Prep* was implemented to strengthen the relationship between secondary and postsecondary education. According to Jenkins 1996, "it marries academic and vocational skills designed to prepare students for college or additional technical/vocational training and a workplace/apprenticeship" (p. 31) . "Thus, the integration of vocational and academic education offers an opportunity to effect change in an educational system that is in need of reform" (Lankard, 1992, p. 1).

In 1997, the *Career Options Law*, Act 1124, was passed in Louisiana for public school students which placed emphasis on career-focus activities at the middle school level and implemented a five-year educational plan for high school students. The five-year educational plan includes a sequence of courses related to the students' goals through one year after high school approved by the student, guardian and school. Students, in high school, are to update their five-year plan annually. In conjunction with Act 1124, the Diploma Endorsement option allows high school students to complete an area of concentration which is training in a particular field. The career cluster for "business" is Business Management and Administration and the areas of concentration associated with this cluster are administration support and business administration.

The *Career Options Law*, Act 1124:

mandates that all high school students have a five-year educational plan and that all high schools offer career majors/areas of concentrations. It is the intent of the law that students have a focus while in school to help make learning more relevant and meaningful.

Students in 6th – 8th grades must complete at least six career awareness activities which help students to develop a five-year educational plan. It also requires school systems to offer areas of concentrations to address students' interests (Louisiana Department of Labor, Education and the Board of Regents, 2007, The Career Options Section, ¶'s 1 & 2).

The role of CTE is debatable. With the passing of various legislation acts, including the *No Child Left Behind* (NCLB) Act passed in 2001, which reauthorized the Elementary and Secondary Education Act (ESEA) of 1965, CTE must come to the forefront. As indicated by the USDOE, 2001, ¶ 3 (as cited by Harvey, 2004), The *No Child Left Behind* (NCLB) Act requires:

- state, school districts and school accountability;
- highly qualified teachers, and administrators;
- parent and student choices;
- a stronger emphasis on reading; and

- state flexibility and local system control regarding supporting public education.

This NCLB Act is designed to make teachers, administrators, parents' students, and the community more accountable. It provides for quality teachers, reading, accountability, parent's choice and specific goals to be met by 2014. As a result of this act, states must define standards for grade level achievement. However, upon reading the act, a clear lack of employability assessments was observed by the researcher. The NCLB Act coordinates with the Perkins Act integrating academic and vocational programs and appears to be narrowly focused, underfunded and poorly implemented. In addition, it ensures "highly qualified teachers" in academic subjects therefore neglecting CTE teachers and their qualifications. This Act readily addresses the academic arena in that it raises standards for all students in addition to expectations to participate in post-secondary education. Nevertheless, all students are not going to attend a post-secondary institution. Many will leave high school and enter directly into the workforce. All the same, students are lacking critical thinking skills, the ability to follow directions, reason and analyze. As a result, students are exiting high school without being prepared for the "world of work." CTE programs are designed to provide training and/or real-world application/experience for students and almost always answers the questions, why do I need to know this or why do I have to do this? Standardized testing at present does not assess competencies acquired in elective courses. CTE provides technical knowledge and skills aligned with academic standards that are "needed to prepare for further education and careers in current or emerging professions" (United States Department of Education, Carl D. Perkins Career and Technical Education Improvement Act, P.L. 109-270, 2006, p. 4).

In 2006, *The Carl D. Perkins Vocational and Technical Education Act* provided for an increased focus on the academic achievement of career and technical education students, strengthening the connections between secondary and postsecondary education, and improving

state and local accountability (United States Department of Education, 2007). This act strengthens accountability through evaluation and assessment, links academics and technical instruction as well as secondary to postsecondary education and addresses preparation for higher skilled and technical employment while acquiring industry credentialing. As a result of *The Carl D. Perkins Vocational and Technical Education Act of 2006*, the term vocational education became obsolete and was officially replaced with the term career and technical education.

Years ago, the focus of career and technical education was on career preparation for the workforce. Today's career and technical education curriculum is two-fold: it focuses on both academics and workplace training. Almost all high school students enroll in at least one CTE course. These elective classes are a fundamental part of the high school curriculum. Students enrolled in these types of courses are able to acquire hands-on training and are less likely to become bored in class. They acquire technical skills while being provided real-world experiences. Daggett 2009, states (as cited in the Tennessee Department of Education CTE: A 2020 Vision Powerpoint), "Knowledge alone, without knowing how to apply it is inadequate. Students need both rigorous and relevant standards if they are to be prepared to function in a technological, information based society" (Tennessee Department of Education website, Career and Technical Education (CTE) section, Previous CTE: A 2020 Vision-Archived Version PowerPoint, Slide No. 8). Today's society is constantly changing. Students must be able to acquire knowledge and apply it when necessary.

Cano 1993, (as cited in Elliott 2007) states that "CTE programs assist students in developing and improving their problem-solving skills, which in turn aids in the process of critical thinking" (Background section, ¶ 2). The seven CTE program areas offered in Louisiana in grades 7 – 12 are Agriculture, Business, Family and Consumer Sciences, Health Occupations, Marketing, Technology, and Trade and Industrial Education (Louisiana Board of Elementary and

Secondary Education Programs of Study, n.d.). According to the Louisiana Department of Education Website (2008), the mission of the career and technical education section “strives to provide all students a challenging, relevant, meaningful, and seamless education that will help them become lifelong learners and productive citizens of the 21st Century” (Louisiana Department of Education website, Career and Technical Education page, Our Vision section, 1).

The National Assessment of Vocational Education (NAVE) 2002, (as cited by Harvey and Koch 2004), indicated in an article titled, *No Child Left Behind: Policymakers Need to Reconsider Secondary Career and Technical Education for Students with Special Needs*, that “Secondary CTE is designed to meet the needs of a variety of students and is responsive to changes in education, society, labor markets, and the economy” (Harvey and Koch, 2004, Conclusion section, ¶ 4). Harvey and Koch, 2004 states that “Secondary CTE provides relevant curriculum that promotes staying in school and acquiring basic academic, social and occupational skills for adult life” (Conclusion section, ¶ 4). As stated by the Advisory Committee for the National Assessment of Vocational Education (NAVE):

Career and technical education empowers students by providing a range of learning opportunities that serve different learning styles. CTE relies on a powerful mode of teaching and learning that cognitive scientists call “contextual” or “situated” learning, both in classrooms and in workplaces. For many students, applying academic and technical skills to real-world activities, using computers and other tools, and being able to see how their learning is related to the world of work make CTE classes more interesting and motivating, and more educationally powerful than standard academic classes. A career focus often gives students a sense of direction and motivates them to achieve and to stay in school. Practically inclined students can be hooked on academic learning through CTE study. . . . Just having the option of being able to concentrate in CTE in high school results in more young people staying in school because more individually relevant choices are available to them (p. 2).

According to an Association for Supervision and Curriculum Development InfoBrief titled *Protecting the Students Interest*, “The focus” [of CTE] “is on exposing students to a broad range of career options that help bring relevance and meaning to education and that concentrate as

much on college and academic preparation as technical training” (Laitsch, 2005, A Broader Vision: Career and Technical Education section, ¶ 3).

Business Education

“Business Education in Louisiana is a broad, comprehensive curriculum that prepares students to become productive citizens in a global economy. It develops knowledge, skills, and attitudes necessary to succeed in the workforce and provides the basis for students to successfully complete postsecondary programs in various content areas” (Business Education Content Standards Curriculum Framework for Louisiana, 2008, p. 1). The mission of Business Education in Louisiana is to:

1. provide students with business knowledge and workplace skills in preparation for initial employment and advancement in a career;
2. background information for further study in the field of business;
3. technology skills for personal and work-related environments;
4. leadership abilities for fulfilling career, social, and civic responsibilities; and
5. career information and development of personal qualities necessary for a successful career (Louisiana Department of Education website, 2008, Business Education Mission Statement section).

As previously noted, the state of Louisiana offers seven CTE program areas in grades 7 – 12: Agriculture; Business; Family and Consumer Sciences; Health Occupations; Marketing; Technology; and Trade and Industrial Education (Louisiana Board of Elementary and Secondary Education Programs of Study, n. d.). This study examines one of the areas in CTE, business education. Business Education courses offered in Louisiana include Accounting I & II, Administrative Office Support, Business Communication, Business Computer Application, Business English, Business Law, Computer Multimedia Presentation, Computer Technology Literacy, Cooperative Office Education/Internship, Desktop Publishing, Economics, Entrepreneurship, Financial Math, Introduction to Business Computer Applications, Keyboarding/Keyboarding Applications, Lodging Management I & II, Principles of Business, Telecommunications, Web Design, and Word Processing. General career and technical education

courses include General Cooperative Education and Education for Careers (Louisiana Board of Elementary and Secondary Education Programs of Study, n.d.). Students enrolled in business education courses are provided an opportunity to demonstrate knowledge and competencies acquired in a specific area by acquiring an industry-based certification (i.e. Internet and Computing Core [IC3], Microsoft Certified Application Specialist [MCAS]). “An industry-based certification is tangible evidence that an individual has successfully demonstrated skill competencies in a specific set of work related tasks, single occupational area, or a cluster of related occupational areas” (Louisiana Department of Education website, 2008, Family, Career and Technical Education page, ¶ 1). The receipt of such a certificate can possibly lead to better employment and better wages exemplifies this credential. Students obtaining this documentation may very well qualify for a Career and Technical Endorsement provided other requirements have been met. “The five career majors for the business career cluster are Accounting, Administrative Support, Business Administration and Management, Economics/Finance [and] Information Systems” (Business Education Content Standards Curriculum Framework for Louisiana, 2008, p. 4).

In 1995, the National Business Education Association published the *National Standards for Business Education: What America’s Students Should Know and Be Able to Do in Business*. This document provides standards for business education programs, defines the parameters of the discipline of business education, and provides a guide for curriculum writers to use in developing superior programs in business education. These standards are designed to develop students' comprehensive knowledge and competence. The NBEA recommends that students should be able to:

1. Function as economically literate citizens through the development of personal consumer economic skills, a knowledge of social and government responsibility, and an understanding of business operations;

2. Demonstrate interpersonal, teamwork, and leadership skills necessary to function in multicultural business settings;
3. Develop career awareness and related skills to enable them to make viable career choices and become employable in a variety of business careers;
4. Select and apply the tools of technology as they relate to personal and business decision making;
5. Communicate effectively as writers, listeners, and speakers in social and business settings;
6. Use accounting procedures to make decisions about planning, organizing, and allocating resources;
7. Apply the principles of law in personal and business settings;
8. Prepare to become entrepreneurs by drawing from their general understanding of all aspects of business;
9. Understand the interrelationships of different functional areas of business and the impact of one component on another;
10. Develop the ability to participate in business transactions in both the domestic and international arenas;
11. Develop the ability to market the assets each individual has whether they be in the labor market or in the consumer goods market;
12. Manage data from all of the functional areas of business needed to make wise management decisions; [and]
13. Utilize analytical tools needed to understand and make reasoned decisions about economic issues, both personal and societal (Business Education Content Standards Curriculum Framework for Louisiana 2008, [Bulletin 1977], National Standards for Business Education, 1995, p. 1).

Another aspect of a quality business education program is the participation in a student organization. Student organizations are great resources and play important roles in the development of student's leadership abilities. One such organization that business students often join is Future Business Leaders of America-Phi Beta Lambda (FBLA-PBL), a non-profit educational organization. Future Business Leaders of America, an organization for high school students, and PBL, an organization for postsecondary students, prepares students for careers in business and business-related fields funded by membership dues (FBLA-PBL, 2009). The notion of FBLA was developed in 1937 with the Louisiana chapter being organized in 1949 (FBLA-PBL, 2009). In addition, students acquire leadership skills, engage in community service projects, attend conferences, and participate in competitive events. Membership exists for middle school, high school, college, and professional divisions. According to the FBLA-PBL website,

FBLA-PBL is the largest business student organization in the world. The mission of FBLA-PBL is “to bring business and education together in a positive working relationship through innovative leadership and career development programs” (FBLA-PBL, 2009, About FBLA-PBL page, Mission & Pledge link, ¶ 1). Business teachers are usually the advisors of these organizations with assistance from other teachers and community volunteers. Students often compete in events giving him or her the opportunity to raise student achievement.

Student Achievement

Improving student achievement has been the focus of education for many years. Achievement, according to the Merriam-Webster Online Search (2010), is defined as “a result gained by effort” (Definition No. 2). Many individuals feel as though class size and teacher qualifications are the sole factors that influence student achievement. Yet, others believe that it is a combination of many factors.

Change is happening everywhere. For several years now, throughout the United States, much discussion has taken place regarding rigorous curriculums, accountability, and increased standards for public school systems. As a result, states have instituted various standardized tests for grades K – 12th. Each state determines what is to be tested, the grade level to be tested and when it is to be tested. In addition, graduation requirements have increased and high-stakes tests implemented in order to earn a high school diploma.

The rationale for high-stakes testing is that the promise of rewards and the threat of punishments will cause teachers to work more effectively, students to be more motivated, and schools to run more smoothly-all of which will result in greater academic achievement for all students, but especially those from poverty and minority backgrounds” (Nichols & Berliner, 2008, p. 672). According to Nielson, 1985 (as cited by Elliot 2007), [High-stakes tests are often] “the most visible indicator of successes and failures” (Elliot, 2007, ¶4) [for the students as well as the parents].

Measures that ensure accountability are most often in the form of assessments. The online Encarta World English Dictionary (2009) defines assessment as a “method of evaluating student

performance and attainment” (Definition No. 4). Generally, assessments fall into two categories; formative and summative or norm-referenced and criterion-referenced tests in which both play integral parts in student achievement. Formative or criterion-referenced assessments are normally a part of classroom practice. Both the teacher and student are key players. It is at this time that adjustments can be made to assignments, projects, performances and/or presentations, to name a few. Summative or norm-referenced assessments often suggest some evidence of a student’s overall success. This type of benchmark yields comparisons to demonstrate students’ growth. CTE teachers are accustomed to utilizing both formative and summative assessments in class. Still, many states have instituted an “exit exam” which is necessary to acquire a high school diploma.

Teachers evaluate students in numerous ways; some to include, but are not limited to work performed, observation, tests, application, and participation. A student’s progress can be measured in a variety of ways. In any learning environment, a learner should be able to exhibit what has been learned. Methods by which learners may demonstrate what they have learned include, but are not limited to memorization, application, identification, demonstration and/or observation. Measuring student progress is a fundamental part of any instructional program. Teachers can be effective or ineffective in the classroom. They have great impact on student achievement.

Standardized Testing

A standardized test is an exam that is administered in the same testing conditions to different groups. In other words, a standardized test, wherever and whenever it is given, includes the same questions, takes the same amount of time to complete, and is scored in the same way. Because of this uniformity, standardized test scores are able to show how your child did compared with others who took the test, not just in the same classroom but the state and across the country (Cookson & Halberstam, 1998, pp. 2-3).

For the most part, standardized tests are a part of college admission regulations. Tests are used in numerous situations to measure different competencies. In the United States, both the American College Testing (simply known as ACT), and the Scholastic Aptitude Test (SAT) are used as college entrance examinations and the Graduate Record Examination (GRE) is often used for admissions into a graduate program. “The ACT assesses high school students' general educational development and their ability to complete college-level work” (ACT, 2010, ¶ 1). It includes assessments in the areas of English, mathematics, reading, and science; and it also includes an optional writing section. The SAT assesses skills that students need to be successful in college which are those subjects learned in high school (Collegeboard, 2010). Reading, writing, and mathematics are the subject areas tested. In addition, the GRE measures critical, analytical and reasoning skills. Whether it is the ACT, SAT, or GRE, test scores aid in the process of comparing students and their performance to other applicants along with their potential of becoming successful and/or acquiring a scholarship. “Standardized tests are known to vary in their ability to fairly assess students' knowledge,” [just as teacher assessments do] (Sanders and Horn, 1995, p. 2). According to Goodwin and Driscoll, 1980, pp. 59-60 (as cited on the North Central Regional Educational Laboratory website), standardized tests have the following qualities:

- They provide a "systematic procedure for describing behaviors, whether in terms of numbers or categories."
- They include specified procedures for administration and scoring.
- The test items are derived from experience, either by experiment or observation, rather than theory.
- They have an established format and set of materials.
- They present the same tasks and require the same response modes from all test takers.
- They provide tables of norms to which the scores of test takers can be compared in order to ascertain their relative standing (Standardized Test section, ¶ 2).

“Historically, tests without stakes or with very low stakes have seldom driven change or improvement” (Reville, 2008, p. 54). As a result of increased graduation requirements, college entrance requirements, school’s accountability and performance scores, students’ enrollment into these programs have decreased. “CTE educators realize that students who are not highly successful in core academic areas may yet be very successful in the CTE areas” (Kymes, 2004, A Philosophical Debate section, ¶ 3).

According to the U.S Department of Education, Office of the Secretary, Office of Public Affairs, 2004, (as cited by Elliott, 2007), “High-stakes testing (HST) continues to play a prominent role in this legislation (Elliot, 2007, ¶ 2).” “High stakes test-based reform is an approach that is most driven by state-level mandate; and it suits the political appetite for rapid, quantifiable results” (Thompson, 2001, p. 359). Those in favor of high-stakes testing tend to believe that tests are needed to close the achievement gap when it comes to socioeconomic status and race. State educational agencies must conduct annual reviews to ensure that adequate yearly progress is being made as a result of being accountable. This is usually publicized in the form of state report cards. Schools that are not up to par may undergo corrective action, restructuring, or other actions.

“Across the nation, schools under intense pressure to show better test results have allowed those tests to cannibalize the curriculum” (Kohn, 2001, ¶ 4). “High-stakes testing hysteria has caused some business education departments to experience lower enrollments-and possible elimination of programs-because of the pressure on students to take more academic courses” (Glenn, 2005, p. 9). Corbett and Wilson (as cited in Langenfeld, Thurlow, & Scott, 1997) state that:

Stakes can become high when test results automatically trigger important consequences for students or the school system, and also when educators, students, or the public perceive that significant consequences accompany test results. Thus, a formal trigger of consequences need not be built into the testing

program for stakes to be high. Instead, test results can cause the public to make an assessment of the quality of the school system that serves them, and this judgment in turn can lead to a conclusion that children's choices . . . have been affected. The product of this process can be increased public pressure to improve test scores, especially when the perception is that the system is likely to have a negative impact on those choices (p. 27).

For the sole purpose of improving test scores, teachers are teaching to the test. As a result, high-stakes tests appear to be driving instruction primarily focusing on improving test scores (Greene, 2003). Early on, high school was geared toward preparing individuals to become productive citizens and/or to enter college. For quite some time now, schools all over the nation have been under constant pressure and scrutiny to implement measures to increase standards and to ensure accountability.

In 1998, according to the Louisiana Department of Education, Recommendations for Louisiana's Public Education Accountability System (p. 1), (as cited in Johnson & Johnson, 2002), the Louisiana "accountability system was designed to provide the pressure for districts and schools to do the very best they can with existing resources while directing additional support to schools in need" (p. 3, ¶ 1). Louisiana uses three standardized test to measure specific skills acquired in Louisiana. The Louisiana Educational Assessment Program (LEAP) is administered to 4th and 8th grade students in science, social studies, math, and English language arts (ELA). The Graduate Exit Exam for the 21st Century (GEE) is administered to 10th grade students in math and English language arts (ELA) and 11th grade students in social studies and science. Both the LEAP and GEE are considered high-stakes tests in which they receive either advanced, mastery, basic, approaching basic, or unsatisfactory as an achievement level rating. Students in grades 3, 5, 6, and 7 are administered the *Integrated* Louisiana Educational Assessment Program (iLEAP) assessment in social studies and science and in grade 9, English language arts and math.

Factors That Influence Student Achievement

Student achievement can be impacted in a number of ways. A report issued by the Baton Rouge Area Chamber (2006) suggested that there are a vast amount of “in-school” and “non-school” factors that impact student achievement. In-school factors reported include “faculty and administration characteristics, district funding and resources, and classroom quality and activities” (p. 1). Non-school factors “included student life outside of school, parental involvement in education, and family and household characteristics” (p. 1).

Marzano, Pickering, & Pollock (2001) identify nine instructional strategies that enhance student achievement. They are:

- Identifying similarities and differences;
- Summarizing and note taking;
- Reinforcing effort and providing recognition;
- Homework and practice;
- Nonlinguistic representations;
- Cooperative learning;
- Setting goals and providing feedback;
- Generating and testing hypotheses; and
- Activating prior knowledge.

These strategies are simply methods that the teacher should feel compelled to use in aiding the delivery of effective classroom instruction. By doing so, the teacher will be addressing a variation of learning styles among various grade levels. Being able to engage students in instruction improves student performance. Yet, student motivation encourages student

achievement, which is an ongoing process with the aid of teachers, principals, and parents as active participants.

Patrick (1991) believes that there are several things that can be done to improve student achievement. They are:

- Challenging subject matter;
- Increase time for core subjects;
- In-depth investigations;
- Active learning and thinking;
- Development of cognitive skills and processes;
- Usage of multiple resources and media;
- High expectations for student performance;
- Safe and stable, school climate;
- Parental involvement; and
- Assessments.

Many individuals classify schools with low-performing scores as ineffective schools thereby deeming the staff as ineffective. On the other hand, schools with high-performing test scores are considered effective schools with effective staff members. It is often believed that, schools that exhibit low scores are often associated with students that share economical or societal challenges.

According to the Wisconsin Education Association Council website, student achievement is affected by four categories of variables: (1) school, (2) family and the individual, (3) social incentives, and (4) socioeconomic conditions (Wisconsin Education Association Council, n.d.). All of the aforementioned categories are critical factors but may affect students in different ways depending on the circumstance. School variables can consist of tracking, class size, and school

size. Family and the individual variables encompass parental support and guidance along with emphasis placed on the value of education among family members. Social incentives encourage students to do better while socioeconomic conditions addresses life style, home environment, community and self-awareness. These variables can plague students in intervals or all at once.

Demographic Variables

Over the years, research has been done to determine the influences of various characteristics on student achievement. The variables age, gender, race and socioeconomic status are examined here.

Age

Tests have proven to be challenging at all levels and all ages. They are designed to measure information taught and serve as the basis for several purposes (i.e. placement, promotion, graduation, employment, admissions). Today, high-stakes tests determine student's achievement levels. Low self-esteem, low expectations, and lack of interest in school may often be the result of low test results. As a result, students are often labeled because of test scores which frequently lower students' self-esteem. Moreover, researchers suggest that as low-self-esteem students grow-up, student achievement decreases or the gap widens.

Gender

Research often indicates that teachers interact differently depending on the gender of their students. Yet, research is needed to determine how teacher influences reflect student performances on standardized tests. The male/female population differs greatly by course/subject matter. Many still lack the ability to be open minded when selecting courses in a stereotypical manner. Sadker 1994, (as cited by Chapman, 2002) states:

Sitting in the same classroom, reading the same textbook, listening to the same teacher, boys and girls receive very different educations. In fact, upon entering school, girls perform equal to or better than boys on nearly every measure of

achievement, but by the time they graduate high school or college, they have fallen behind... (Chapman, 2002, ¶ 1).

For many years now, there has been an achievement gap between genders in the educational arena especially when it comes to standardized examinations. Some research indicates that females are shortchanged when it comes to being educated because many teachers often give more attention to the male student.

Race

It has frequently been documented that whites outperform blacks on standardized tests. Research indicates that poor and minority students are among the first to drop out of school. In fact, black males are in the forefront for having the highest high school dropout rate. In addition, if students are not in attendance, they cannot be taught resulting in low test scores. Often times, the graduation rate is examined as a means to determine the performance of a school. According to the Editorial Projects in Education Research Center (as cited by the Alliance for Excellent Education, 2009), in 2005-2006, approximately 62% of all students in Louisiana graduated from high school with a regular diploma in four years which is below the national average. In addition, the subgroups' reported percentages were Asian 74%, Hispanic 74%, White 69% and Black 51% (cited by the Alliance for Excellent Education, 2009). For many years, the National Assessment of Educational Progress (NAEP) data has reported achievement gaps among minority and non-minority students. As stated by the National Education Association (NEA) on their website, "The term "achievement gap" is often defined as the differences between the test scores of minority and/or low-income students and the test scores of their White and Asian peers (National Education Association, 2009, Highlights section, Seventh Highlight, ¶ 1)." NEA also indicates that "student groups experiencing achievement gaps are racial and ethnic minorities, English language learners, students with disabilities, boys/girls, and students from low-income families" (National Education Association, 2009, Highlights section, Seventh Highlight, ¶ 1). Black and

Hispanic students often display substantial gaps in test scores when compared to White students at all levels of education (Alvarez, 2004 p. 1). According to an article titled *Racial Gap in Student Achievement Could be Cultural Bias, School Leaders Say*, written by Melissa Navas (2009), state that “In 2007, national reading and math assessments showed White students outperformed Black, Latino and Native American students by between 20 to 30 percentage points. Asian students were a percentage point higher than white students in reading and 8 percentage points higher in math” (Navas, 2009, ¶ 4).

Many argue that the purpose of high-stakes tests is to improve student achievement. Tests such as these are designed to make students cognizant of their own performance and/or abilities. However, this type of test often poses problems for minorities and students with disabilities. Supposedly, it is an indication of what is being taught in the classroom. As mentioned earlier, research indicates that white students outperform black students on standardized tests. “The difference in educational achievement between white students, on the one hand, and Black and Hispanic students, on the other, is large and persistent” (Chubb & Loveless, 2002, p. 1).

A study conducted at Ball State University, revealed that high-achieving white students required to take exit exams fell behind when compared to students from states not requiring exit exams by a 13 to 16% margin (Viadero, 2005). Viadero (2005) also indicates that most states in the South have already instituted high-stakes exit exams in areas where there is a vast amount of poor and minority students. In a recent study, students in eighteen states, who were required to pass a graduation exam, were compared to students in thirty-three (33) states who were not required to take and pass such an examination. Evidence revealed that students from the exit-exam states, for the most part, scored lower on their SAT tests as well as had lower graduation rates (Viadero, 2005).

Socioeconomic Status

According to Cunningham and Sanzo 2002, (as cited by Marchant and Paulson, 2005), “performance on high stakes tests, such as graduation exams, has been found to be directly related to the socioeconomic status of students” (p. 3). In addition, students with lower achievement scores are 25% more likely to become dropouts (Marchant & Paulson, 2005). Chubb and Loveless (2002) state that, “Blacks and Hispanics are much more likely than whites to suffer the social problems that often accompany low income” (p. 1). It also indicates that students that are teen parents (especially single parents), handicapped, limited English proficient, economically, and academically disadvantaged are mainly associated with CTE populations often yielding lower test scores. Research also indicates that students that are academically disadvantaged are associated with lower standardized test scores and high dropout rates. Over the years, tests have demonstrated that some groups of students (especially low income) are not scoring as well on tests as those from affluent environments. Many individuals feel that tests are biased against minority populations. For the most part, tests are designed to measure one’s ability or intelligence.

The Effects of CTE

“Career and technical education (CTE) produces gains in academic achievement and earnings and represents a significant contribution to the education of America’s youth and adults in preparation of a skilled workforce” (Association for Career Technical Education, 2008, ¶ 1). According to Krile 2002, (as cited by Brand, 2003) “Evaluations of CTE programs, including those with Tech Prep articulated programs, in schools and districts show that CTE programs contribute to increased school attendance, reduced high school dropout rates, higher grades, and increased entry into postsecondary education” (p. 4). According to Stone and Alfeld (2004), there is a growing body of research that links enrollment in high school CTE to reducing students

dropping out. Much discussion has surfaced as to whether or not CTE combats the dropout problem. Students' choosing to drop out of school is a national concern. CTE courses allow for hands-on experiences causing students to be less likely to become bored with the subject matter being presented. Many students feel disconnected or disengaged and drop out. Yet, students that are enrolled in courses that allow for hands-on experiences feel just the opposite. Much research indicates that students learn more when they are actively engaged in the learning process. Career and technical education math and English courses actively engage students and are examined here.

Mathematics

Many educators find teaching mathematics quite difficult especially when trying to relate math lessons/concepts to real-world experiences. Students should be encouraged to apply mathematical concepts learned and to determine the relevancy of lessons taught all while building confidence and reducing anxiety (Scarpello, 2009). In addition, integrating math into the CTE curriculum is considered to be a natural process. Problem-solving, logical reasoning and strategizing should infuse the curriculum as students acquire mathematical skills. Students may enroll in financial math, accounting, business computer applications, and/or other CTE courses.

English

Knowing and understanding the grammar of a sentence, pronunciation and articulation is imperative; yet, many of today's young people fail to see the relevance of knowing these aspects of language. Students enrolled in business English courses improve both language and business skills by acquiring business writing and presentation skills.

Teachers can impact students' learning ability and attitudes drastically by providing a motivational and stimulating learning environment. CTE courses often integrate technology which peaks additional interests in the subject matter being taught. "Modern CTE programs,

geared to technology and industrial standards, can provide the same level of rigor and relevance to which the other traditional academic courses aspire, and at the same time sustain the unique identity of CTE” (Drage, 2009, p. 34). Students tend to learn better when they are engaged in the subject matter being presented. It is often acknowledged that reducing class size is imperative in increasing student achievement. In addition, students’ environment, socioeconomic status, and support system all contribute to either low or high levels of student achievement. Student achievement can be measured in a variety of ways. As a result of the federal NCLB Act, test results are imperative in assessing student learning and the quality or performance of a school and its teachers.

Summary

Education programs should provide opportunities for all students to achieve their academic, personal, social, and career potentials (Policies Commission for Business and Economic Education, 2007). “This reform vocational education is characterized by a curriculum based on the need for students to demonstrate mastery of (a) rigorous industry standards, (b) high academic standards and related general education knowledge, (c) technology, and (d) general employment competencies” (Lynch, 2000, ¶ 8). According to Elias & Merriam 1985, (as cited by Kymes, 2004), “progressive philosophy is evident in CTE’s ability to foster creativity and stability, as well as individuality and social consciousness” (A Philosophical Date section, ¶ 3).

It is often said that the purpose of education is learning, not teaching. It is assumed that all students learn differently, but that all students can learn and are entitled to an education. Everyone has their own way or style of learning. The way a person prefers to learn is often noted as their learning style (Learning-styles, n.d.). The emotional state of a person can prevent him or her from learning new material. Students are often told what to learn and when to learn it. Students are always asking why do I need to know this, or why must I learn this? More often

than not, these questions are not asked to CTE teachers. For the most part, students are given this answer through application and their environment (Mohr, 2008).

Educational standards and goals are proposed, however the boundaries of educational issues rest among local, state, and federal bodies. National standards do not exist so; therefore, cannot be enforced. As proclaimed on the Organizing for America's website (2009), The Current Situation section, in the words of President Barack Obama:

At this defining moment in our history, preparing our children to compete in the global economy is one of the most urgent challenges we face. We need to stop paying lip service to public education, and start holding communities, administrators, teachers, parents and students accountable. We will prepare the next generation for success in college and the workforce, ensuring that American children lead the world once again in creativity and achievement (§ 1).

It is evident from this statement that President Obama realizes too, that there is a great need to prepare young people for both the workforce as well as an institution of higher learning.

Each state continues to experience change. AchieveTexas, a college and career initiative in the state of Texas; prepares students for secondary and postsecondary opportunities, career preparation and advancement, meaningful work, and active citizenship. It “is an ambitious vision of an improved education system that is based on rigorous standards of performance established in partnership with the business community” (AchieveTexas, 2008, Implementation Guide, p. 1). Through this initiative, Texas is attempting to ensure student success. In July 2009, the governor of Louisiana signed legislation that created a new career diploma pathway for high school students that is designed to aid in workforce preparedness and reduce the dropout rate. Additionally, other states are attempting to implement plans that will aid in student success.

Career and technical education courses are continuously being revamped to more academic content thereby making the curriculum more rigorous and relevant. Business education

is and should be a vital part of any curriculum. “Education, at all levels, opens routes to achieve higher incomes, status advancement, and upward social mobility” (Baker, 2005, p. 243).

CHAPTER 3

METHODOLOGY

Population and Sample

The primary purpose of this study was to compare the academic achievement, as measured by scores on the English and math portions of the Graduate Exit Examination (GEE), of high school students in Louisiana by whether or not they were identified as a business education student. For the purpose of this study, a business education student was defined as a student who had taken a business education course or one who was currently enrolled in a business education course. Various coding instructions exist in the LEAP/GEE testing administration manual for coding the demographic section of the GEE answer document. Instructions for the coding of CTE students (which is only included on the math and English answer documents) allow for certain personnel to code students CTE classification. Personnel that choose not to pre-code the answer documents leave students to self-report their CTE classification or to not choose a classification at all. The target population for this study was all public high school students in the state of Louisiana. The accessible population was all 10th and 11th grade students enrolled in public high schools in the state of Louisiana during the 2008-2009 school year who were initial testers taking the math and English parts of the GEE and who were not classified as “special education,” “504,” or “LEP.” The sample included 100% of the defined accessible population.

Instrumentation

A computerized recording document was used as the instrument for the research. The data received from the Louisiana Department of Education Division of Student Standards and Assessments was in an ASCII file format with the file layout in an Excel document. Variables downloaded into the study recording form included:

- a. Age;
- b. Grade level;
- c. Race;
- d. Gender;
- e. Socioeconomic status as measured by lunch prices (free, reduced or paid);
- f. Business education student or non-business education student;
- g. Scaled GEE math overall score;
- h. Raw GEE math subscale scores;
- i. Scaled GEE English overall score; and
- j. Raw GEE English subscale scores.

Data Collection

A completed application for exemption from institutional oversight was submitted to the Institutional Review Board seeking approval to conduct the study. Next, a data request form was also completed to obtain GEE data for the 2008-2009 school year from the Louisiana Department of Education. Once approval had been granted by the Institutional Review Board (see Appendix A), the data request form was submitted with a blank compact disc to the Louisiana Department of Education's Division of Planning, Analysis & Information Resources (see Appendix B). The database provided by the Louisiana Department of Education (LDOE) included all of the necessary measurements for addressing the study objectives, but no personal identifiers for individual students were included in the database. Therefore, even though children under the age of 18 (defined as a "vulnerable population" by LSU's IRB) were the primary focus of this study and made up the majority of the subjects, there was no risk to the members of the population since they will be completely anonymous. The LDOE copied the

requested data to the compact disc provided and was imported into the Statistical Package for the Social Sciences software program for analysis.

Data Analysis

Data was analyzed using the Statistical Package for the Social Sciences (SPSS version 16.0 for Windows). Specific analyses used to accomplish each objective of the study are presented in the following sections.

Research Objective 1

To describe 10th and 11th grade students in Louisiana enrolled in regular education programs completing the math and English portions of the GEE on the following characteristics:

- a. Age;
- b. Grade level;
- c. Gender;
- d. Race;
- e. Socioeconomic status determined by lunch prices (free, reduced or paid); and
- f. Business education students or non-business education students.

The data for objective 1 was analyzed using basic descriptive statistics. Subjects were described based on selected demographics and educational attributes. Variables measured on a categorical scale were reported using frequencies and percentages. Variables measured on an interval scale were analyzed using means and standard deviations.

Research Objective 2

To describe 10th and 11th grade students in Louisiana enrolled in regular education programs on their math and English achievement as measured by scores and sub-scores on the GEE.

The data for objective 2 was analyzed using basic descriptive statistics including means and standard deviations for each scale and sub-scale measured.

Research Objective 3

To compare 10th and 11th grade students in Louisiana enrolled in regular education programs on the following selected demographic characteristics by whether they were identified as a business education student.

- a. Age;
- b. Grade level;
- c. Gender;
- d. Race;
- e. Socioeconomic status determined by lunch prices (free, reduced or paid); and
- f. Business education students or non-business education students.

The variable age, measured on a continuous scale, was compared using an independent t-test. Other variables were measured on a categorical scale and compared using the chi-square test of independence.

Research Objective 4

To compare 10th and 11th grade students in Louisiana enrolled in regular education programs on their math and English achievement as measured by scores and sub-scale scores on the GEE by whether they are identified as a business education student.

The data was analyzed using comparative statistics to compare business education students to non-business education students on their respective scores using independent t-tests.

Research Objective 5

To determine if a model exists explaining a significant portion of the variance in the GEE math and English scores and sub-scale scores of 10th and 11th grade students in Louisiana enrolled in regular education programs from the following characteristics:

- a. Age;
- b. Grade level;
- c. Gender;
- d. Race;
- e. Socioeconomic status determined by lunch prices (free, reduced or paid); and
- f. Business education students or non-business education students;

Objective 5 was analyzed using multiple regression analysis. A separate regression analysis was conducted for each of the overall math and English scaled scores. For each analysis, the primary independent variable (whether or not the student is identified as a Business education student) was entered into the model first, followed by stepwise inclusion of other variables that added a significant amount of explained variance.

CHAPTER 4

FINDINGS

The findings of the study are presented in this chapter. They are organized by the study objectives.

Research Objective 1

Research objective 1 was to describe 10th and 11th grade students in Louisiana enrolled in regular education completing the math and English portions of the GEE on the following characteristics:

- a. Age;
- b. Grade level;
- c. Gender;
- d. Race;
- e. Socioeconomic status as measured by lunch prices (free, reduced or paid); and
- f. Business education students or non-business education students.

All selected demographic information was taken from the computerized answer document from the Graduate Exit Examination (GEE).

Students who were classified as “special education,” “504,” and “LEP” were eliminated from the study. These groups were eliminated to avoid potential bias between the study groups (business education and non-business education). In addition, math and English retesters were eliminated to avoid practice test effects. After the specified groups were removed, there were a total of 47,942 subjects. Students taking both the math and English portions of the GEE ranged in age from 14 - 21. The mean age of these students was 15.71 years ($SD = 1.07$). There were 25,672 (53.5%) tenth grade subjects examined and 22,270 (46.5%) eleventh grade subjects. In addition, there were 24,854 (52.1%) female subjects and 22,848 (47.9%) male subjects.

Another variable on which students were described was race. A total of five different races were identified among the study subjects. The race that was reported by the largest group of students was White representing 52.4% ($n = 25,044$) of the students. The group with the lowest number identified was Asian at .8% ($n = 408$) (see Table 1).

Table 1
Race of Students Completing the English Language Arts and Math portions of the Graduate Exit Exam during the 2008 - 2009 school year

Race	<i>n</i>	%
White	25,044	52.4
Black	20,982	43.9
Hispanic	827	1.7
American Indian	562	1.2
Asian	408	.8
Total	47,823	100.0

Another characteristic on which students were described was their socioeconomic status. This characteristic was measured using their lunch status (free, reduced, or paid), as determined by the school and/or the Louisiana Department of Education based on submission of a prior application completed by their guardian. There were 25,468 (53.4%) students that received free lunch; 3,902 (8.2%) students that received a reduced lunch rate; and 18,313 (38.4%) students that paid full price for lunch.

Whether or not a student was classified as a business education student was also identified in the dataset. There were 3,362 (7.0%) students identified as business education students and 12,020 (25.1%) students identified as non-business education students. The other 32,560 (67.9%) students were not identified as to their business education status.

Research Objective 2

Research objective 2 was to describe 10th and 11th grade students in Louisiana enrolled in

regular education programs on their math and English achievement as measured by scores and sub-scores on the GEE. Potential scaled scores on the English and math portions of the GEE range from 100 (the lowest possible score) to 500 (the highest possible score) divided into five categories. These categories and the score ranges that correspond to each category are presented in Table 2.

Table 2
Categories of Achievement Levels and their Respective Scaled Score Ranges for English Language Arts and Math portions of the Louisiana Graduate Exit Exam

Achievement Level	English Language Arts	Mathematics
Advanced	398 – 500	377 – 500
Mastery	347 – 397	346 – 376
Basic	299 – 346	305 – 345
Approaching Basic	270 – 298	286 – 304
Unsatisfactory	100 - 269	100 - 285

Note. Taken from the LEAP and GEE Interpretive Guide, Louisiana Department of Education, 2009

Information collected in the study to describe students' achievement levels is presented to address each of the following sets of scores:

- a. GEE scaled score for English;
- b. GEE overall raw score for English;
- c. GEE sub-scores for English;
- d. GEE scaled score for Math;
- e. GEE overall raw score for Math; and
- f. GEE sub-scores for Math;

Students taking the math and English portions of the GEE must score *Approaching Basic* on each portion as partial requirements for a Louisiana high school diploma. The minimum score

for the ELA portion is 270.00, and the minimum score for math is 286.00 to reach *Approaching Basic* (LEAP and GEE Interpretive Guide, Louisiana Department of Education, 2009).

English GEE Scores

There were 43,131 students with useable scores on the ELA portion of the GEE. The ELA portion of the GEE test consisted of scores for seven content standards and scores for four subtests. Regarding the content standards, the standard which had the highest percent of correct responses was Standard 3, “Use conventions of language,” with a mean score of 8.87 ($SD = 2.07$) which was 73.9 % correct responses. The standard with the lowest percent of correct responses was Standard 6, “Read, analyze literature,” with a mean score of 5.61 ($SD = 2.10$) which was 46.8% correct responses (see Table 3). All of these scores are reported as raw scores rather than scaled scores. The total raw scores ranged from 0 – 66.5 ($m = 44.03$, $SD = 8.65$).

Table 3
Mean Scores for each Content Standard of the English Language Arts test for the 2008 - 2009 Louisiana Graduate Exit Exam

Standards	<i>m</i>	<i>SD</i>	Min ^a	Max ^b	% Correct
(3) Use conventions of language	8.87	2.07	0	12.0	73.9
(2) Write competently	5.60	.99	0	8.0	70.0
(5) Locate, select, information	6.18	1.70	0	9.0	68.7
(7) Reasoning and problem-solving	11.58	3.0	0	18.0	64.3
(1) Read, comprehend, and respond	6.18	1.9	0	10.0	61.8
(6) Read, analyze literature	5.61	2.10	0	12.0	46.8
Total Raw Scores ^c	44.03	8.65	0	69.0 ^d	63.8

Note. Standard (4) not assessed – Apply speaking and listening

^aBoth possible and actual minimum score

^bBoth possible and maximum score

^cDoes not equal the sum of measures in the column due to rounding error

^dPossible maximum score, actual maximum score is 66.5

The ELA measures were also reported as four subtests. Of these subtests, Subtest 1, “Writing,” with a mean score of 9.03 ($SD = 1.47$) had the highest percentage of correct responses (75.3%). The subtest with the lowest percent of correct responses was Subtest 3, “Reading and responding,” with a mean score of 23.37 ($SD = 5.79$) and 60.0% correct responses (see Table 4).

Table 4
Mean Scores for each Subtest of the English Language Arts test for the 2008 - 2009 Louisiana Graduate Exit Exam

Subtest	<i>m</i>	<i>SD</i>	Min ^a	Max ^b	% Correct
(1) Writing	9.03	1.47	0	12.0	75.3
(4) Proofreading	6.00	1.67	0	8.0	75.0
(2) Using Information Resources	6.18	6.00	0	9.0	68.7
(3) Reading and Responding	23.37	5.79	0	39.0	60.0

^aBoth possible and actual minimum score

^bBoth possible and actual maximum score

The “Writing” subtest was further divided into six writing dimension scores. Information regarding these scores is presented in Table 5. The writing dimension score that was found to have the highest percentage of correct responses was “Mechanics” (96%). The dimensions that had the lowest percentage of correct answers were “Composing” and “Style/audience awareness” (70% correct for each) (see Table 5).

There were two item types as presented in Table 6. The raw score for each item type was analyzed. Students’ percentage of correct responses for multiple choice test items was 42.7% whereas the percentage of correct responses for the constructed-response items was 40.5%.

The overall ELA scores were also presented in the data converted to scaled scores. The lowest scaled score was 100 (the lowest possible score) while the highest scaled score was 500 (the highest possible score). The mean scaled score was 323.89 ($SD = 38.42$). In addition to presenting the student’s mean scores on the ELA portion of the GEE, information is provided on

the classification of students into the established categories. The category in which the largest number of students were classified was at the “Basic” level ($n = 22,741$; 47.4%). Approximately 5.1% of the students taking this portion of the test score scored unsatisfactory or did not attain the minimum score (see Table 7).

Table 5
Mean Scores for the English Language Arts Writing Dimensions for the 2008 – 2009 Louisiana Graduate Exit Exam

Dimension	<i>m</i>	<i>SD</i>	Min ^a	Max ^b	% Correct
(5) Mechanics	.96	.164	0	1.0	96.0
(6) Spelling	.87	.286	0	1.0	87.3
(3) Sentence formation	.84	.313	0	1.0	83.7
(4) Usage	.76	.365	0	1.0	76.0
(1) Composing	2.80	.503	0	4.0	70.0
(2) Style/audience awareness	2.80	.506	0	4.0	70.0
Total	9.03	1.47	0	12.00	75.3

Note. Total *N* of subject with useable data was 43,131

^aBoth possible and actual minimum score

^bBoth possible and actual maximum score

Table 6
Mean Scores for Item Types of the English Language Arts tests for the 2008 – 2009 Louisiana Graduate Exit Exam

Item Type Subtests	<i>m</i>	<i>SD</i>	Min ^a	Max ^b	% Correct
(1) Multiple-Choice Items	10.24	5.89	0	24	42.7
(2) Constructed –Response Items	5.27	3.14	0	13	40.5

^aBoth possible and actual minimum score

^bBoth possible and actual maximum score

Math GEE Scores

There were 47,982 students with useable scores on the math portion of the GEE. The math portion of the GEE test consisted of 5 standards and 2 subtests. Regarding the content

standards, the standard which had the highest percent of correct responses was Standard 4, “Geometry” with a mean score of 9.7 ($SD = 3.10$) which was 60.6% correct responses (see Table 8). The standard with the lowest percent of correct responses was Standard 2, “Algebra,” with a mean score of 5.27 ($SD = 3.14$) which was 41.0% correct responses. All of these scores are reported as raw scores rather than scaled scores. The total raw scores ranged from 0 – 76.0 ($m = 48.34$, $SD = 12.48$).

Table 7
Achievement Levels for the English Language Arts portion of the 2008 – 2009 Louisiana Graduate Exit Exam

English Language Arts Achievement Level	<i>n</i>	%
Advanced	856	1.8
Mastery	7,525	15.7
Basic	22,741	47.4
Approaching Basic	9,576	20.0
Unsatisfactory	2,433	5.1
Total	43,131	100.0

Note. Scaled scores ranged from 100 to 500, mean 323.89 ($SD = 38.42$)

There were two item type subtests as presented in Table 9. Students’ percentages of correct responses for multiple choice test items (69.3%) were higher than for the constructed-response items (42.4%).

The overall math scores were also presented in the data converted to scaled scores. The lowest scaled score was 100 (the lowest possible score) while the highest scaled score was 500 (the highest possible score). The mean score for this portion of the test was 334.55 ($SD = 43.77$). In addition to presenting the student’s mean scores on the math portion of the GEE, information is provided on the classification of students into the established categories. Approximately 9.2% of students taking the math portion of the GEE scored *Unsatisfactory* or did not attain the

minimum score whereas 17.1% scored *Approaching Basic* as presented in Table 10.

Approximately 16.8% of the total population scored at the *Mastery* level or higher.

Table 8

Mean Scores for each Content Standard of the Math test for the 2008 - 2009 Louisiana Graduate Exit Exam

Test	<i>m</i>	<i>SD</i>	Min ^a	Max ^b	% Correct
(4) Geometry	9.7	3.10	0	16.0	60.6
(5) Data analysis, prob. & discrete math	9.0	2.97	0	16.0	56.3
(3) Measurement	6.5	2.60	0	13.0	50.0
(6) Patterns, relations & functions	7.9	3.35	0	16.0	49.4
(1) Number and number relations	10.24	5.86	0	24.0	42.7
(2) Algebra	5.27	3.14	0	13.0	41.0
Total Raw Scores ^c	48.34	12.48	0	98.0 ^d	49.3

^aBoth possible and actual minimum score

^bBoth possible and actual maximum score

^cDoes not equal the sum of measures in the column

^dPossible maximum score, actual maximum score is 76.0

Table 9

Mean Scores by Item Types for the Math Subtests for the 2008 – 2009 Louisiana Graduate Exit Exam

Item Type Subtests	<i>m</i>	<i>SD</i>	Min ^a	Max ^b	% Correct
(1) Multiple-Choice Items	41.6	9.92	0	60	69.3
(2) Constructed –Response Items	6.78	3.29	0	16	42.4

^aBoth possible and actual minimum score

^bBoth possible and actual maximum score

Research Objective 3

Research objective 3 was to compare 10th and 11th grade students in Louisiana enrolled in regular education programs on the following selected demographic characteristics:

- a. Age;

- b. Grade level;
- c. Gender;
- d. Race;
- e. Socioeconomic status as measured by lunch prices (free, reduced or paid); and
- f. Business education students or non-business education students.

The age variable was measured on a continuous scale of measurement therefore the comparison between the groups was made using an independent t-test whereas the other variables compared were measured on a categorical scale and comparisons were made using the chi-square test of independence.

Table 10
Achievement Levels for the Math portion of the 2008 – 2009 Louisiana Graduate Exit Exam

Math Achievement Level	<i>n</i>	%
Advanced	2,662	5.5
Mastery	5,413	11.3
Basic	22,424	46.7
Approaching Basic	8,219	17.1
Unsatisfactory	4,404	9.2
Total	47,982	100.0

Note. Scaled scores ranged from 100 to 500, mean 334.55 ($SD = 43.77$).

The first variable on which the groups were compared was age of the student. There were 3,361 students identified as business education students and 12,003 identified as non-business education students for which useable age data was available. The mean age of the business education students ($m = 16.25$, $SD = .59$) was slightly lower than the mean score of non-business education students ($m = 16.42$, $SD = .73$). The ages were statistically compared using an

independent t- test. Examination of the t-test revealed that the non-business education students were significantly older than the business education students ($t_{15,362} = 12.29, p < .001$).

The variables grade level of students and whether or not the student was classified as a business education student were examined using a chi-square test of independence to determine if they were independent of one another. Results of the chi-square test ($\chi^2, (1, n = 15,382) = 198.8, p < .001$) were examined by the researcher and found to be significant. Therefore, the variables grade level and business education status were not independent. The cross-classification of the subjects on these variables is presented in Table 11. The nature of the association between these variables is such that a higher percentage of business education students were 10th grade (65.9%) than among the non-business education students (52.2%).

Table 11
Cross Classification of Grade Level and Business Education Status of High School Students who completed the 2008 – 2009 Louisiana Graduate Exit Exam

Grade	Business Education $\frac{N}{\%}$	Non-Business Education $\frac{N}{\%}$	Total $\frac{N}{\%}$
10 th	2,215 65.9%	6,275 52.2%	8,490 55.2%
11 th	1,147 34.1%	5,745 47.8%	6,892 44.8%
Total	3,362 100.0%	12,020 100.0%	15,382 100.0%

Note. ($\chi^2 (1, n = 15,382) = 198.8, p = <.001$).

A chi-square test of independence was used to determine if the variables gender and whether or not the student was classified as a business education student were independent. Results of this test indicated that the variables were independent ($\chi^2 (1, n = 15,306) = 3.71, p = .054$) (see Table 12). Another variable examined to determine if it was independent of business

education status was race. This study identified five different race categories (American Indian, Asian, Black, Hispanic, and White) among the study subjects. The results of the chi-square test of independence ($\chi^2 (4, n = 15,350) = 80.53, p < .001$) were examined by the researcher and found to be significant. It revealed that the variables business education status and race are not independent of one another. The cross-classification of these variables is presented in Table 13. The nature of the association between these variables was such that Black's made up a smaller percentage of the business education students while Whites made up a larger percentage of business education students.

Table 12
Cross Classification of Gender and Business Education Status of High School Students who completed the 2008 – 2009 Louisiana Graduate Exit Exam

Gender	Business Education $\frac{N}{\%}$	Non-Business Education $\frac{N}{\%}$	Total $\frac{N}{\%}$
Female	1,841 55.0%	6,351 53.1%	8,192 53.5%
Male	1,507 45.0%	5,607 46.9%	7,714 46.5%
Total	3,348 100.0%	11,958 100.0%	15,306 100.0%

Note. ($\chi^2 (1, n = 15,306) = 3.71, p = .054$)

The last variable examined for independence from the variable business education status was socioeconomic status (SES). SES was measured using the lunch payment status of students (free, reduced, and paid) in this study. Examination of the results of the χ^2 test of independence revealed that the variables business education status and socioeconomic status were not independent ($\chi^2, (2, n = 15,303) = 42.99, p < .001$). The nature of the association between these variables was such that the business education students had a higher percentage of students that

paid for their lunch (51% versus 45.7%) while a higher percentage of the non-business education students received free lunch (see Table 14).

Table 13
Cross Classification of Race and Business Education Status of High School Students who completed the 2008 - 2009 Louisiana Graduate Exit Exam

Race	Business Education <u>N</u> %	Non-Business Education <u>N</u> %	Total <u>N</u> %
American Indian	29 .9%	141 1.2%	170 1.1%
Asian	49 1.5%	130 1.1%	179 1.2%
Black	1,162 34.6%	5,135 42.8%	6,297 41.0%
Hispanic	54 1.6%	196 1.6%	250 1.6%
White	2,064 61.5%	6,390 53.3%	8,454 55.1%
Total	3,358 100.0%	11,992 100.0%	15,350 100.0%

Note. (χ^2 (4, $n = 15,350$) 80.53, $p = <.001$)

Research Objective 4

Research objective 4 was to compare 10th and 11th grade students in Louisiana enrolled in regular education programs on their math and English achievement as measured by scores and sub-scores on the GEE by whether or not they are identified as a business education student.

In examining the ELA achievement of students, the independent t-test procedure was used to compare the business education students on their English Language Arts (ELA) scores and sub-scores of the GEE. The ELA component of the GEE is divided into multiple subtests on multiple dimensions of ELA achievement. The first measurement examined was the content standards of the ELA test. The test is divided into a total of six content standards. Each of these

standards was compared by business education status of students, and the business education group was found to have significantly higher scores on all six of the content standard scores (see Table 15.) The content standard which was found to have the greatest difference was *Standard 3*, “Use conventions of language.” The mean score for the business education group was 9.0 ($SD = 1.89$) while the mean for the non-business education was 8.7 ($SD = 2.05$) ($t_{13508} = 8.45, p < .001$).

Table 14
Cross Classification of Socioeconomic Status and Business Education Status of High School Students who completed the 2008 – 2009 Louisiana Graduate Exit Exam

Lunch Status	Business Education $\frac{N}{\%}$	Non-Business Education $\frac{N}{\%}$	Total $\frac{N}{\%}$
Paid	1,711 51.0%	5,458 45.7%	7,169 46.8%
Free	1,345 40.1%	5,551 46.5%	6,896 45.1%
Reduced	299 8.9%	393 7.9%	1,238 8.1%
Total	3,355 100.0%	11,948 100.0%	15,303 100.0%

Note. ($\chi^2 (2, n = 15,303) 42.99, p = < .001$)

The ELA section is also divided into four subtests. Each of these subtests was compared by business education status of students, and the business education group was found to have significantly higher scores on all four subtests (see Table 16). The subtest which was found to have the greatest difference was Subtest 3, “Reading and Responding.” The mean score for the business group was 23.9 ($SD = 5.32$) while the mean for the non-business education was 23.1 ($SD = 5.73$).

The ELA section was also divided into five writing dimensions. Each of these dimensions was compared by business education status of students, and the business education group was found to have significantly higher scores on all five dimensions. The dimension which was found

to have the greatest difference was *Dimension 4*, “Usage.” The mean score for the business education group was .85 ($SD = .31$) while the mean for the non-business education group was .80 ($SD = .34$) ($t_{13508} = 6.89, p < .001$) (see Table 17).

Table 15

Comparison of English Language Arts Content Standard Scores by Business Education Status of 10th and 11th Grade Students in Louisiana

Variable ^a	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Standard 3	Business Education	3349	9.0	1.89	8.45	13508	<.001
	Non-business education	10161	8.7	2.05			
Standard 7	Business Education	3349	11.2	2.7	6.79	13508	<.001
	Non-business education	10161	10.8	2.9			
Standard 6	Business Education	3349	6.1	2.2	6.76	13508	<.001
	Non-business education	10161	5.8	2.2			
Standard 5	Business Education	3349	6.1	1.6	6.15	13508	<.001
	Non-business education	10161	5.9	1.7			
Standard 2	Business Education	3349	5.7	.78	6.05	13508	<.001
	Non-business education	10161	5.6	.90			
Standard 1	Business Education	3349	6.6	1.56	5.32	13508	<.001
	Non-business education	10161	6.5	1.67			

^aContent of each standard is as follows: Standard 1 – Read, comprehend, and respond; Standard 2 – Write competently; Standard 3 – Use conventions of language; Standard 4 – Not assessed; Standard 5 – Locate, select, and synthesize information; Standard 6 – Read, analyze, and respond to literature; Standard 7 – Apply reasoning and problem-solving skills;

ELA total scores comparing business education students and non-business education scores on the 2008 - 2009 GEE were also analyzed. Examination of these results revealed that business education students’ overall mean raw scores and mean scaled scores were higher than the non-business education students (see Table 18).

Scores were also given for the item types, multiple choice and constructed-response. Each score indicated the total number of items correct by item type. Business education students and non-business education students were compared to determine if the scores were

significantly different. Business education students exhibited higher scores than non-business education students on both item type scores (see Table 19).

Finally, a chi-square test of independence was used to determine if the variables business education status and ELA score category were independent. The significant chi-square of independence test ($\chi^2 (4, n = 13,510) = 78.86, p = <.001$) indicates that the variables were not independent. The nature of the association between these variables was such that a lower percentage of business education students achieved below basic (both unsatisfactory and approaching basic) as their achievement level than among non-business education students. Additionally, a higher percentage of business education students attained *Mastery* as their achievement level than non-business education students (see Table 20).

Table 16
Comparison of English Language Arts Subtest Scores by Business Education Status of 10th and 11th Grade Students in Louisiana

Variable ^a	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Subtest 3	Business Education	3349	23.9	5.32	7.62	13508	<.001
	Non-business education	10161	23.1	5.73			
Subtest 1	Business Education	3349	9.3	1.12	7.49	13508	<.001
	Non-business education	10161	9.1	1.38			
Subtest 4	Business Education	3349	5.3	1.61	7.35	13508	<.001
	Non-business education	10161	5.1	1.69			
Subtest 2	Business Education	3349	6.1	1.62	6.15	13508	<.001
	Non-business education	10161	5.9	1.71			

^aContent of each subtest is as follows: Subtest 1 – Writing; Subtest 2 – Using Information Resources; Subtest 3 – Reading and Responding; Subtest 4 – Proofreading;

An independent t-test procedure was also used to compare the business education students on their math scores and sub-scores of the GEE. The math component of the GEE is divided into six standards and two subtests. Each of these standards was compared by business education status of students, and the business education group was found to have significantly

higher scores on all six of the content standard scores as presented in Table 21. The highest t – value was exhibited in Standard 5 in the area of “Data analysis, probability and discrete math.”

The mean score for the business education group was 11.5 ($SD = 2.60$) while the mean for the non-business education was 11.1 ($SD = 11.1$) ($t_{13505} = 7.80$, $p < .001$).

Table 17

Comparison of English Language Arts Writing Dimension Scores by Business Education Status of 10th and 11th Grade Students in Louisiana

Variable ^a	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Dimension 4	Business Education	3349	.85	.31	6.89	13508	<.001
	Non-business education	10161	.80	.34			
Dimension 2	Business Education	3349	2.8	.41	5.99	13508	<.001
	Non-business education	10161	2.8	.47			
Dimension 1	Business Education	3349	2.8	.41	5.99	13508	<.001
	Non-business education	10161	2.8	.47			
Dimension 3	Business Education	3349	.89	.26	5.02	13508	<.001
	Non-business education	10161	.86	.29			
Dimension 5	Business Education	3349	.96	.16	3.13	13508	<.002
	Non-business education	10161	.95	.19			
Dimension 6	Business Education	3349	.96	.17	2.19	13508	<.001
	Non-business education	10161	.95	.18			

^aContent of each dimension is as follows: Dimension 1 – Composing; Dimension 2 – Style/audience awareness; Dimension 3 – Sentence formation; Dimension 4 – Usage; Dimension 5 –Mechanics; Dimension 6 – Spelling.

The math section is also divided into two subtests. Each of these subtests was compared by business education status and the business education group was found to have significantly higher scores on both subtests (see Table 22). The subtest which was found to have the greatest difference was Subtest 1, “Multiple-Choice.” The mean score for the business group was 43.4 ($SD = 8.59$) while the mean score for the non-business education was 42.1 ($SD = 9.42$).

Both math raw and scaled scores were also analyzed. Results indicated that the total math scaled scores and total math raw scores of business education students were significantly higher than the scores for the non-business education students (see Table 23).

Finally, a chi-square test of independence was used to determine if the variables business education status and math score category were independent. The significant chi-square test of independence ($\chi^2(4, n = 13,510) = 78.86, p = <.001$) indicates that the variables were not independent. The nature of the association was such that a lower percentage of business education students achieved below basic (both unsatisfactory and approaching basic) as their achievement level than among non-business education students. Additionally, a higher percentage of business education students attained *Mastery* and *Advanced* as their achievement levels than non-business education students (see Table 24).

Table 18
Comparison of English Language Arts Total Scores by Business Education of 10th and 11th Grade Students in Louisiana

Variable	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Raw Score	Business Education	3355	44.7	7.76	9.02	13508	<.001
	Non-business education	10152	43.2	8.56			
Scaled Score	Business Education	3355	312.3	30.94	8.65	13508	<.001
	Non-business education	10152	306.3	36.20			

Table 19
Comparison of English Language Arts Item Type Scores by Business Education Status of 10th and 11th Grade Students in Louisiana

Variable	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
MC	Business Education	3349	23.4	4.24	9.12	13508	<.001
	Non-business education	10161	22.6	4.67			
CR	Business Education	3349	12.0	3.81	6.08	13508	.002
	Non-business education	10161	11.5	4.00			

Note. MC = Multiple Choice; CR = Constructed Response

Table 20

Cross Classification of English Language Arts Achievement Levels on the 2008 - 2009 Louisiana Graduate Exit Exam

Achievement Level	Business Education <u>N</u> %	Non-Business Education <u>N</u> %	Total <u>N</u> %
Unsatisfactory	226 6.7%	1,114 11.0%	1,340 9.9%
Approaching Basic	829 24.8%	2,833 27.9%	3,662 27.1%
Basic	1,878 56.1%	5,165 50.8%	7,043 52.1%
Mastery	391 11.7%	970 9.5%	1,361 10.1%
Advanced	25 .7%	79 .8%	104 .8%
Total	3,349 100.0%	10,161 100.0%	13,510 100.0%

Note. (χ^2 (4, $n = 13,510$) = 78.86, $p = <.001$)

Research Objective 5

Research objective 5 was to determine if a model exists explaining a significant portion of the variance in the academic achievement (as measured by GEE math and English scores) of 10th and 11th grade students in Louisiana enrolled in regular education programs from the following characteristics:

- a. Age;
- b. Grade Level;
- c. Gender;
- d. Race;
- e. Socioeconomic status as measured by lunch prices (free, reduced or paid); and
- f. Business education students or non-business education students.

Objective 5 was analyzed by using multiple regression analysis. The first dependent variable to be examined was the English Language Arts score. To accomplish this objective, the ELA overall scaled score was selected as the most appropriate measure of academic achievement in the ELA area. To conduct the regression analysis, independent variables that were measured on a categorical scale of measurement (nominal or ordinal) that were not natural dichotomies had to be recoded into a series of binary variables. These variables included race and socioeconomic status. Measurements for the variable race were categorized into one of five racial groups (American Indian, Asian, Black, Hispanic, and White). Data was recoded so that for each of these racial categories, subjects were classified as either having that trait or not having that trait. For example, all subjects in the study were classified as either American Indian or not American Indian, etc. Therefore, five binary variables (one for each category of race) were created and prepared for use in the regression analysis. Similarly, for the variable, socioeconomic status, each subject was classified as either receiving free lunch or not receiving free lunch, etc. Therefore, for this trait, (socioeconomic status), three variables were created (one for each measurement category) for use in the regression analysis.

After the independent variables were prepared for entry into the regression analysis, the researcher examined the bivariate correlations between the dependent variable (in this case the ELA scaled score) and each of the independent variables planned for inclusion in the analysis. These bivariate correlations are presented in Table 25. Out of the twelve variables examined, nine were found to be significantly related to the ELA scaled score (see Table 25). The variable that had the highest correlation with the ELA scaled score was “Age” $r = -.31$ $p < .001$. The nature of this relationship was such that older students tended to score lower on math scaled scores.

Table 21
Math Content Standard Scores Comparing Business Education Students to Non-Business Education Students on the 2008 – 2009 Louisiana Graduate Exit Exam

Variable ^a	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Standard 5	Business Education	3355	11.5	2.60	7.80	13505	<.001
	Non-business education	10152	11.1	2.75			
Standard 1	Business Education	3355	4.6	1.25	6.45	13505	<.001
	Non-business education	10152	4.4	1.37			
Standard 4	Business Education	3355	10.1	3.00	6.27	13505	<.001
	Non-business education	10152	9.7	3.12			
Standard 6	Business Education	3355	10.3	2.77	6.13	13505	<.001
	Non-business education	10152	9.9	2.95			
Standard 3	Business Education	3355	7.5	2.50	5.67	13505	<.001
	Non-business education	10152	7.3	2.59			
Standard 2	Business Education	3355	6.2	1.82	5.01	13505	<.001
	Non-business education	10152	6.0	1.92			

^aContent of each standard is as follows: Standard 1 – Number and number relations; Standard 2 – Algebra; Standard 3 – Measurement; Standard 4 – Geometry; Standard 5 – Data analysis, probability and discrete math; Standard 6 – Patterns, relations and functions.

Table 22
Math Subtest Scores Comparing Business Education Students to Non-Business Education Students on the 2008-2009 Louisiana Graduate Exit Exam

Variable ^a	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Subtest 1	Business Education	3355	43.4	8.59	7.46	13505	<.001
	Non-business education	10152	42.1	9.42			
Subtest 2	Business Education	3355	6.8	3.30	6.59	13505	<.001
	Non-business education	10152	6.4	3.40			

^aContent of each subtest is as follows: Subtest 1 – Multiple-Choice items; Subtest 2 – Constructed-Response items.

The final aspect of preparation for conducting the regression analysis was to test for excess multicollinearity among the independent variables in the analysis (grade level, gender, race, and socioeconomic status, of the selected independent variable not explained by the other

independent and business education status). The procedure used to test for multicollinearity was to examine the tolerance values. Tolerance, as defined by Hair, et.al, is “the amount of variability variables” (p. 227). Hair suggests that a tolerance value of less than .10 indicated excessive multicollinearity. The tolerance values in this analysis ranged from .16 to .99; therefore no instances of excess multicollinearity were judged to be present in this data.

Table 23
Math Total Scores Comparing Business Education Students and Non-Business Education Students on the 2008 - 2009 Louisiana Graduate Exit Exam

Variable	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Raw Score	Business Education	3355	50.2	11.29	7.60	13505	<.001
	Non-business education	10152	48.4	9.42			
Scale Score	Business Education	3355	332.4	40.6	6.38	13505	<.001
	Non-business education	10152	327.1	42.5			

Table 24
Cross Classification of Math Achievement Levels on the 2008 - 2009 Louisiana Graduate Exit Exam

Achievement Level	Business Education <i>N</i> %	Non-Business Education <i>N</i> %	Total <i>N</i> %
Unsatisfactory	213 6.3%	1,058 10.4%	1,271 9.4%
Approaching Basic	477 14.2%	1,635 16.1%	2,112 15.6%
Basic	1,763 52.5%	5,105 50.3%	6,868 50.8%
Mastery	549 16.4%	1,422 14.0%	1,971 14.6%
Advanced	353 10.5%	932 9.2%	1,285 9.5%
Total	3,355 100.0%	10,152 100.0%	13,507 100.0%

Note. (χ^2 (4, *n* = 13,507) = 67.10, *p* < .001)

For the ELA regression analysis, the variable, whether or not the subject was a business education student, was entered into the regression model using the forced entry technique as the first step in the analysis. This was implemented due to the fact that business education status was the primary variable of investigation.

The second step in the analysis was to enter all of the remaining independent variables into the analysis using the stepwise technique with the stipulation that only variables that added one percent or more to the explanatory model would be part of the model and then only if the overall model was significant. The five variables which entered the regression model explained 19.3% of the variance (see Table 26). Variables that did not enter the model are also presented in Table 26.

Two of the variables that were included in the significant regression model were found to have a positive influence on the student's performance on the ELA test of the 2008 - 2009 Louisiana GEE, and three of the variables were found to have a negative influence. Subjects who were identified as business education students and those whose socioeconomic status was characterized as "Paid" lunch status tended to have higher scaled scores on the ELA test of the GEE. Students who were older, those who were "Black," and those who were male tended to have lower scores on the ELA test of the GEE.

The dependent variable to be examined for math was the math overall scaled score. As with the ELA, to conduct the regression analysis, variables that were measured on a categorical scale had to be recoded into a series of binary variables. These variables include race, and socioeconomic status. The researcher examined the bivariate correlations between the dependent variable (the math scaled score) and each of the potential explanatory variables (independent variables). These bivariate correlations are presented in Table 27. Out of the twelve variables examined, nine were found to be significantly related to the math scaled

scores (see Table 27). The variable that had the highest correlation with the math scaled score was whether or not the student's race was "Black" $r = -.33$ ($p < .001$). The nature of this relationship was such that the students who were "Black" tended to have lower math scaled scores. The variable with the next largest correlation with the math scaled score was whether or not the student's race was "White" ($r = .31$, $p < .001$). The nature of this relationship was such that the students who were "White" tended to have higher math scaled scores.

The final aspect of preparation for in conducting the regression analysis was to test for excess multicollinearity among the independent variables in the analysis (grade level, gender, race, socioeconomic status, and business education status). The procedure used to test for multicollinearity was to examine the tolerance values. Tolerance, as defined by Hair, et.al, is "the amount of variability of the selected independent variable not explained by the other independent variables" (p. 227). Hair suggests that a tolerance value of less than .10 indicated excessive multicollinearity. The tolerance values in this analysis ranged from .15 to .99; therefore no instances of excess multicollinearity were judged to be present in this data.

For the math regression analysis, the variable, whether or not the subject was a business education student, was entered into the regression model using the forced entry technique as the first step in the analysis because it was the primary variable of investigation in the study.

The second step in the analysis was to enter all of the remaining independent variables into the analysis using the stepwise technique with the stipulation that only variables that added one percent or more to the explanatory model would be part of the model and then only if the overall model was significant.

The four variables that entered into the regression model explained 16.1% of the variance (see Table 28). Variables that did not enter the model are also presented in Table 28. Two of the variables that were included in the significant regression model were found to

have a positive influence in the students' performance on the math test of the 2008 – 2009 Louisiana GEE, and two of the variables were found to have a negative influence. Subjects who were identified as business education and characterized as “Paid” lunch status tended to have higher scaled scores on the math portion of the GEE. Students who were “Black” and older tended to have lower scores on the math portion of the GEE.

Table 25
Relationship between English Language Arts Scaled Scores of the Graduate Exit Exam and Selected Demographic Characteristics of High School Students in Louisiana

Variable	<i>r</i>	<i>N</i>	<i>p</i>
Age	-.31	13447	<.001
Black	-.30	13447	<.001
White	.29	13447	<.001
Paid lunch status	.26	13447	<.001
Free lunch status	-.26	13447	<.001
Gender ^a	-.14	13447	<.001
Grade Level	-.08	13447	<.001
Business education	.07	13447	<.001
Asian	.05	13447	<.001
Hispanic	.01	13447	.260
American Indian	.00	13447	.417
Reduced lunch status	.00	13447	.397

^aFemale coded 1 and Male coded 2

Table 26

Multiple Regression Analysis of English Language Arts Scaled Scores on Selected Demographic Characteristics of High School Students in Louisiana

ANOVA					
Source of Variation	<i>df</i>	<i>Ms</i>	<i>F</i> -ratio	<i>p</i>	
Regression	5	632989.82	644.38	<.001	
Residual	13,441	982.33			
Total	13,446				
Variables in the Equation					
Model Summary					
Variable	<i>R</i> ² Cumulative	<i>R</i> ² Change	<i>F</i> Change	<i>p</i> Change	<i>Beta</i>
Business Education Status	.005	.005	70.886	<.001	.042
Age	.099	.094	1397.143	<.001	-.240
Black	.164	.065	1049.980	<.001	-.211
Gender	.180	.016	254.361	<.001	-.132
Paid lunch status	.193	.014	227.633	<.001	.131
Variables not in the Equation					
Variable	<i>t</i>		Sign <i>t</i>		
Grade level	-6.582		<.001		
Free lunch status	-4.376		<.001		
Asian	3.066		.002		
White	1.313		.189		

Table 27

Relationship between Math Scaled Scores of the Graduate Exit Exam and Selected Demographic Characteristics of High School Students in Louisiana

Variable	<i>r</i>	<i>N</i>	<i>p</i>
Black	-.33	13438	<.001
White	.31	13438	<.001
Paid lunch status	.26	13438	<.001
Age	-.25	13438	<.001
Free lunch status	-.25	13438	<.001
Gender ^a	.09	13438	<.001
Asian	.09	13438	<.001
Grade level	-.08	13438	<.001
Business education	.05	13438	<.001
Hispanic	.01	13438	.26
Reduced lunch status	-.01	13438	.23
American Indian	-.01	13438	.30

^aFemale coded 1 and Male coded 2

Table 28

Multiple Regression Analysis of Math Scaled Scores on Selected Demographic Characteristics of High School Students in Louisiana

ANOVA					
Source of Variation	<i>df</i>	<i>Ms</i>	<i>F-ratio</i>	<i>p</i>	
Regression	4	951965.136	642.45	<.001	
Residual	13,433	1481.76			
Total	13,437				
Variables in the Equations					
Model Summary					
Variable	<i>R² Cumulative</i>	<i>R² Change</i>	<i>F Change</i>	<i>p Change</i>	<i>Beta</i>
Business Education Status	.003	.003	39.805	<.001	.026
Black	.111	.108	1638.731	<.001	-.250
Age	.150	.038	608.213	<.001	-.188
Paid lunch status	.161	.011	171.994	<.001	.116
Variables not in the Equations					
Variable	<i>t</i>		Sign <i>t</i>		
Grade level	-6.338		<.001		
Gender	11.566		<.001		
Asian	8.486		<.001		
White	-.841		.400		
Free lunch status	-3.026		.002		

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Summary of Methods

The purpose of this study was to compare the academic achievement, as measured by scores on the English and math portions of the Graduate Exit Examination (GEE), of high school students in Louisiana by whether or not they are identified as a business education student. The following objectives were devised to guide this research study:

1. To describe 10th and 11th grade students in Louisiana enrolled in regular education programs completing the math and English portions of the GEE on the following characteristics:
 - a. Age;
 - b. Grade level;
 - c. Gender;
 - d. Race;
 - e. Socioeconomic status as measured by lunch prices (free, reduced or paid), and
 - f. Business education students or non-business education students.
2. To describe 10th and 11th grade students in Louisiana enrolled in regular education programs on their math and English achievement as measured by scores and sub-scale scores on the GEE.
3. To compare 10th and 11th grade students in Louisiana enrolled in regular education programs on the following selected demographic characteristics by whether they are identified as a business education student.
 - a. Age;
 - b. Grade level;

- c. Gender;
 - d. Race;
 - e. Socioeconomic status as measured by lunch prices (free, reduced or paid); and
 - f. Business education students or non-business education students.
4. To compare 10th and 11th grade students in Louisiana enrolled in regular education programs on their math and English achievement as measured by scores and sub-scale scores on the GEE by whether they are identified as a business education student.
5. To determine if a model exists explaining a significant portion of the variance in the GEE math and English scores and sub-scale scores of 10th and 11th grade students in Louisiana enrolled in regular education programs from the following characteristics:
- a. Age;
 - b. Grade level;
 - c. Gender;
 - d. Race;
 - e. Socioeconomic status as measured by lunch prices (free, reduced or paid); and
 - f. Business education students or non-business education students.

The target population for this study was all public high school students in the state of Louisiana. The accessible population was all 10th and 11th grade students enrolled in public high schools in the state of Louisiana during the 2008-2009 school year who were initial testers taking the math and English parts of the Graduate Exit Exam (GEE) and were not classified as “special education,” “504,” or “LEP.” The sample included 100% of the defined accessible population.

A computerized recording document was used as the instrument for this study. The data received from the Louisiana Department of Education Division of Student Standards and

Assessments were in an ASCII file format with the file layout in an Excel document. The data was then downloaded to SPSS for analysis.

Summary of Major Findings

Research Objective 1

Research Objective 1 was to describe 10th and 11th grade students in Louisiana completing the math and English portions of the GEE on age, grade level, gender, race, socioeconomic status, and whether or not they were a business education student. Findings indicated that the mean age of students taking the math and English portions of the GEE was 15.71 years with 53.5% of the students being in the tenth grade. During the 2008-2009 school year, whites, as well as females, were the largest groups identified. In addition, in regards to socioeconomic status, more students (53.1%) received free lunch than any other group. Among the students taking the math and English portions of the test, only a small percentage (7%) of the students were identified as business education students.

Research Objective 2

Research objective 2 was to describe 10th and 11th grade students in Louisiana enrolled in regular education programs on their math and English achievement as measured by scores and sub-scores on the GEE. Each test was observed to determine the performance of each subject. Findings indicate that the lowest score for both math and English was 100 while the highest score was 500.

In regards to English scores, students had the highest percent of items correct in the areas of “Using conventions of language” (73.8%), “Writing” (75.3%), and “Mechanics” (96.0%). Students’ lowest scores reflected in the areas of “Reading and analyzing literature” (46.8%), “Reading and responding” (60.0%), “Composing” (70.0%), and style/audience awareness”

(70.0%). The largest number of students ($n = 22,741$; 47.4%) were classified as having achieved at the “Basic” level using the state classification system.

In regards to math scores, students scored highest in the area of “Geometry” (60.6%). Students’ lowest scores reflected in the area of “Algebra” (41.0%). There were two subtests (multiple-choice and constructed response). The students’ percentage of correct responses for multiple choice test items (69.3%) was higher than the constructed-response items (42.4%). Math results also revealed that the largest number of students was classified as having achieved at the “Basic” level ($n = 22,424$; 46.7%).

Research Objective 3

Research objective 3 was to compare 10th and 11th grade students in Louisiana enrolled in regular education programs on age, grade level, gender, race, and socioeconomic status, and by whether or not they were identified as a business education students. Analysis of the results revealed that the non-business education students were significantly older than the business education students. There were a larger percentage of business education students (65.9%) at the 10th grade level than non-business education students (52.2%). In regards to race, Black’s made up a smaller percentage of the business education students while Whites made up a larger percentage of business education students. There were also a higher percentage of business education students (51%) that paid full price for their lunch than non-business education students (45.7%) in the same category.

Research Objective 4

Research objective 4 was to compare 10th and 11th grade students in Louisiana enrolled in regular education programs on their math and English achievement as measured by scores and sub-scores of the GEE by whether or not they were identified as a business education student. Both ELA and math scores were analyzed using the independent t-test procedure.

The ELA portion of the test consisted of six standards and four subtests. Each of the business education groups was found to have significantly higher scores on all six of the content standard scores than the non-business education students. Additionally, each of the four subtest results revealed that the business education students had significantly higher scores on all four subtests. Regarding achievement level category, there was a lower percentage of business education students that achieved “below basic” than among non-business education students. Correspondingly, a higher percentage of business education students achieved “*Mastery*” as their achievement level than non-business education students.

The math portion of the GEE consisted of six content standards and two subtests. The business education group was found to have significantly higher scores on all six of the content standard scores as well as the two subtests. Math total raw scores revealed that business education students overall mean raw scores and mean scaled scores were higher than the non-business education students. There were also a lower percentage of business education students (20.5%) that achieved “below basic” as their achievement level than among non-business education students (26.5%).

Research Objective 5

Research objective 5 was to determine if a model exists explaining a significant portion of the variance in the GEE English and math scores and sub-scores of 10th grade students in Louisiana enrolled in regular education programs on age, grade level, gender, race, socioeconomic status, and whether or not they were a business education students or non-business education student.

The ELA model included the variables business education status, age, black, gender, and paid in which all variables were significant. The four variables which entered the regression model explained 19.3% of the variance. The independent variable Black ($r = -.33, p < .001$)

was significantly correlated to the dependent variable. The math model included the variables grade level, gender, Asian, White and free lunch in which only three of these variables were significant (grade level, gender, Asian). The three variables which entered the regression model explained 16.1% of the variance. The independent variable Age ($r = -.31, p < .001$) was significantly correlated to the dependent variable. Both variances explained were of low significance. As a result, caution should be exercised.

Conclusions, Implications and Recommendations

Based on the findings of the study, the researcher presents the following conclusions and recommendations:

Conclusion One

The high school Business Education program is no longer a female dominated curriculum. This conclusion is based on the findings of the study that 55.0% ($n = 1,841$) of the business education students were identified as females and 45.0% ($n = 1,507$) were identified as males. In the past, business education courses were mainly considered as classes predominantly for females. Often times, when individuals think of business education they think of “typing.” However, much progress in the area of sex equity and the elimination of sex discrimination and sex stereotyping was a result of the *Carl D. Perkins Act of 1984*.

The business education curriculum is designed to “develop knowledge, skills, and attitudes necessary to succeed in the workforce and provides the basis for students to successfully complete postsecondary programs in various content areas” (Business Education Content Standards Curriculum Framework, 2008, p. 1). This program plays a vital part in the entire high school curriculum.

Nowadays, there are many more courses offered under the umbrella of business education that appeal to both genders than in the past. Both males and females can benefit greatly from

completing business education courses. Yet, the question remains regarding gender equity/differences among teachers in the area of business education.

The researcher recommends further study to examine gender proportions among business education teachers. It is also imperative that information regarding gender equity among students be used in the recruitment of prospective teachers. In addition, schools should continue to advertise course offering to all students while emphasizing the importance of contextual instruction and acquiring technical skills. Therefore, these type courses should be applicable to all high school students with emphasis to attract both male and female students.

Conclusion Two

Business education students did not perform as well on ELA constructed-response items as they did on multiple-choice items. This conclusion is based on the findings that the business education students' percentage of correct multiple-choice responses on the ELA portion of the test was 42.7% while the percentage of correct responses was 40.5% for constructed-response item. Findings on the math portion of the test were 69.3% while the percentage of correct responses was 42.4% for constructed-response items. Constructed-responses are those test items that require students to develop their own written response on which they are scored on both tests (math and English). The English portion of the GEE includes short answer items and essay items. The constructed-response items for the math portion of the GEE includes problems to be solved that involve written problem solutions and developed answers to related questions.

This conclusion has implications for the methods of instruction that are used in Business Education programs. The high-stakes testing program in Louisiana that was initiated in the early 1990's seems to have caused many programs in the state to place a greater emphasis on the students' abilities to perform successfully on objective tests (i.e. multiple-choice tests). This

emphasis may have led to a reduced emphasis on writing oriented type activities associated with constructed response performance.

The researcher recommends that business teachers spend more time incorporating constructed-response item exercises such as tests and activities regularly into their instruction and scoring the written responses utilizing rubrics that will determine if the writer's response is off the topic, unreadable, sufficient, and the overall formation of the response. It is also recommended that curriculum supervisors and administrators implement more professional development activities, specifically for elective teachers that aim towards improving the writing process thereby allowing teachers to become more efficient in aiding their students in improving their writing abilities. In addition, after-school workshops should be made available to students to aid in the preparation of writing prompts. These activities should begin in the summer with proper compensation and or graduate credit offered in order that the school year begins on a good note with proper remediation. Additionally, elective teachers and core teachers can form partnerships in addition to having monthly meetings enhancing the overall teaching process and providing an avenue into the other teacher's environment. Therefore, curriculum developers should be inspirational in creating instruction integrating both business education and academics in the development of assessments and writing activities.

The researcher also recommends that this study be duplicated in other areas of career and technical education. By doing so, the aforementioned activities could possibly be expanded into other CTE programs (i.e. agriculture, family and consumer sciences, health occupations, marketing, technology, and trade and industrial education)

Conclusion Three

Most of the population did not provide a response on the computerized recording document as to their business education status. This conclusion is based on the findings that 67.9% ($n = 32,560$) of the students in this study were not identified as to their business education status.

This researcher considers the findings to have implications regarding the accurate recording or identifying of career and technical education students. Almost every student in high school will have taken at least one, if not more than one career and technical education course by their 11th grade year; and, therefore, could be easily identified as to whether or not they are a business education student. In addition, the Career Options Law, Act 1124 which mandates that all high school students have a five-year educational plan, could be more directly tied to the GEE which would make students providing their business education status much easier and accurate when completing the computerized recording document.

The researcher recommends that the test coordinators do a better job in explaining to the test administrators the importance of properly coding this measurement or having students to properly code it based on courses taken or currently taking. This can be done simply by adding specified instructions/information to the testing instructional manual. A list of classes and classifications can be pre-identified for this matter. Additionally, homeroom teachers can review this process with the students in the days immediately preceding the testing process. All the same, CTE courses along with their program classification could be pre-identified on the computerized recording document making the selection much easier for the student. It is also suggested that maybe the recording data form could have a pre-identifier identifying each student as either a CTE student or not a CTE student. The researcher also recommends that CTE teachers properly prepare students to indicate the proper CTE program choice when completing the computerized recording document. Moreover, emphasis should be placed on completing this part of the document by taking the time

to convey to the students the courses that are a part of the various CTE programs and or categories whereby the student would know exactly what program choice to bubble.

Conclusion Four

Overall, business education students performed better academically than non-business education students on both the math and English portions of the GEE. This conclusion is based on the findings that tenth and eleventh grade students identified as business education students taking the GEE during the 2008 – 2009 school year scored significantly higher than non-business education students on both the ELA and math portions of the test. The mean score for each test for business education students were significantly higher than the mean scores for non-business education students. The ELA portion of the test consisted of six content standards, four subtests and six dimensions. Students identified as business education students scored significantly higher in each area than the non-business education students. Additionally, there were a lower percentage of business education students that achieved below basic (both unsatisfactory and approaching basic) as their achievement level than among non-business education students.

The math portion of the test consisted of six content standards and two subtests. Students identified as business education students scored significantly higher in each area than the non-business education students. Both raw and scaled scores were analyzed and revealed that business education students scored significantly higher than non-business students. Additionally, there were a lower percentage of business education students that achieved below basic (both unsatisfactory and approaching basic) as their achievement level than among non-business education students.

The researcher recommends that students as well as parents should be better informed of CTE course offerings, dual enrollment, articulated courses and industry based certifications. Students, both male and female, should be encouraged to enroll in business education courses.

Findings of this study indicate that these courses contribute to student academic success. They offer students hands-on experience, real-world applications and contextual learning. However, many students are not able to enroll in these classes because of their availability (i.e. only one section offered, the class period offered), and because of the number of required academic courses. Many students often fail academic courses which leave them with little to no room in their schedule to take CTE courses. The researcher recommends that state level administrators of educational programs in Louisiana develop new courses that would integrate academics and business education courses that would be approved for high school graduation credit. Some of these courses might include: business technical writing, applied mathematics, applied technology, research in careers and math for business decisions.

In addition, the state could implement a policy to allow for a smaller teacher student ratio. Immediate remediation could also be provided to those students who have failed a class, similar to “credit recovery,” but rather than a software program guiding the learning process, there would actually be a class offered after hours or on weekends taught by a certified teacher. And finally, students entering their first year of high school who have expressed an interest in acquiring a vocation and entering the world of work immediately following high school can be identified as a CTE student and channeled into the correct path rather than wasting time taking courses that he or she may not need or pass.

The researcher recommends the state and local school boards to do a better job of publicizing the “strides” that CTE is making and has made over the years. It is recommended that various types of advertisements (radio, TV, posters) be made available to the public. As a result of this research, it is time to educate the public on the effectiveness of business education in improving student achievement.

AchieveTexas, a college and career initiative in the state of Texas, prepares students for secondary and postsecondary opportunities, career preparation and advancement, meaningful work, and active citizenship. It has established career clusters, incorporated College Readiness Standards, and other skills.” This idea is to connect what students learn in school every day to what they aspire to do tomorrow, thus increasing engagement with school and motivation to achieve (AchieveTexas, 2008, Dear Colleague page, ¶ 3). This program is geared toward preparing students to compete in today’s workforce along with actively engaging parents in the decision making process.

The researcher also recommends the implementation of a similar program as AchieveTexas in the state of Louisiana to build a stronger educational foundation, increase motivation, workforce and postsecondary preparedness and the overall idea of working together.

Conclusion Five

There is a need for the improvement of GEE scores of regular education students in the state of Louisiana. This is based on the findings that there is still a number of students scoring below the required achievement level while the majority of the students are scoring at the minimum requirement.

There were a total of 47, 942 subjects taking the ELA portion of the test. The mean score for the ELA portion was 323.89 ($SD = 38.42$). The category in which the largest number of students were classified was at the “Basic” level ($n = 22,741$; 47.4%).

There were 47,982 students with useable scores on the math portion of the GEE. The mean score for this portion of the test was 334.55 ($SD = 43.77$). The category in which the largest number of students were classified was at the “Basic” level ($n = 22,424$; 46.7%).

Potential scaled scores on the English and math portions of the GEE range from 100 (the lowest possible score) to 500 (the highest possible score) divided into five categories. The

categories or achievement levels with their respective ranges are *Advanced* (398-500), *Mastery* (347-397), *Basic* (299-346), *Approaching Basic* (270-298), and *Unsatisfactory* (100-269).

Upon analyzing both math and English scores, the researcher recognized that the majority of students in the state of Louisiana scored at the middle range (Basic) with more students scoring below this level (Approaching Basic and Unsatisfactory) than those scoring above this level (Mastery and Advanced).

While it is clear to the researcher that this need for improvement in student's performance on these standardized tests exists, a number of questions arise in the researcher's mind that could have implications for further research and for educational practice as well. These questions include: Is the GEE an accurate measure of materials taught? Is there a lack of preparation or proper tutorial information available? Are students more likely to drop out of school because of low test scores? Students enrolled in CTE courses are able to acquire employable skills, and be tested on tasks learned thereby obtaining industry based certifications creating an environment in which they are less likely to dropout.

It is recommended that courses, classes, and/or workshops be implemented in attempt to improve students' performance on standardized tests. In addition, there should be more teacher input regarding test development. Moreover, perhaps the state superintendent and the state board of education should explore avenues for improving student scores statewide. Additionally, a pilot program could be implemented to determine if test performance is influenced by test preparation. The researcher also recommends that further study be done to determine how soon after reporting GEE scores are students dropping out. Measuring student progress is a fundamental part of any instructional program, but as stated by Sanders and Horn (1995) "standardized tests, whether the ubiquitous multiple choice test or other forms of standardized assessment, vary in

their ability to fairly assess student knowledge, just as teacher assessments do” (Debate section, ¶ 2).

Conclusion Six

Black students in the state of Louisiana do not perform as well on standardized tests as other races. The test was administered to over 47,000 students consisting of five racial groups (American Indian, Asian, Black, Hispanic, and White). According to Alvarez (2004), considerable gaps in test scores exist in Blacks and Hispanics when compared to Whites. Alvarez also notes that minority students are among the first to drop out of school.

It appears as though the “Black” students are at risk of underachieving and/or not performing well on standardized tests. Results of the multiple regression analysis revealed that the race “Black” entered the model for both the ELA and math portions of the test and was highly significant in its contribution to the model. The race Black explains 6.5% of the variance in ELA whereas it explains 10.8% of the variance in the math portion of the test. Additionally the nature of the influence of this variable was such that “Blacks” tended to score lower on both tests than students who were not “Black.”

Based on this conclusion and these results, the researcher recommends that further research be conducted that is targeted to identify specific factors that influence “Black” students to perform more poorly than non-Blacks on standardized tests. Questions that might be addressed in this study could include: Are there intervening factors that influence this poor performance such as socioeconomic status? Are there motivational factors that interfere with test performance, especially those motivational factors associated with establishing priorities in life choices? Are there psychometric characteristics of the tests that create cultural biases in the test leading to lower performance among Black students? Such intervening factors may include parents’ income level and educational level, nutrition, siblings and overall environment. Motivational factors influencing

the learning process can be both intrinsic and extrinsic depending on the student and his or her purpose for learning. Also, when a student has very limited experiences resulting from his environment, especially the cultural aspects, this can lead to beliefs and perceptions that may impact their performance on standardized tests.

Conclusion Seven

Students with low socioeconomic status in the state of Louisiana do not perform as well on standardized test as other students. Socioeconomic status in this study was measured by lunch prices (free, reduced, or paid). It is evident that students' economic environmental influences are greater than most schools can financially or socially handle. Using the multiple regression analysis, the lunch status "paid" entered the model for both math and ELA portions of the test. In regards to the ELA portion of the test, the lunch status "paid" explained 1.4% of the variance in the model whereas it explained 1.1% of the variance in regards to the math portion of the test. The nature of this influence was such that those with lower socioeconomic status tended to have lower standardized test scores. Many of these same students have issues that the more affluent would not be able to comprehend.

The researcher recommends that schools enhance parental involvement in order to provide learning experiences and opportunities to their children and those around. Research indicates that parental support is key in reducing the gap of academic achievement. This can be done by informing the parents (i.e. newsletters, website, letters, and telephone calls) of upcoming events (i.e. parent workshops, open house, nutrition, money management). However, informing parents is not enough. Transportation should be provided for the parents that are interested but have no readily available means of getting to the school. Students with low SES are deficient in many areas. Educators must remember that students come from all walks of life and must be treated accordingly. Teachers and administrators should continue to maintain high expectations of all

students, especially those with lower SES encouraging them to “rise to the occasion.” In addition, certain programs should be targeted for students, who may be depressed, lack reading skills, have trouble focusing; several grade levels behind and on the brink of dropping out of school. Programs that are not working should be done away with while creating new ones with a small teacher to student ratio. Of course, with new programs/initiatives funding is always an issue, but imperative. Yet, when budget cuts are prevalent, education is always one of the first areas to be considered an area that needs “trimming.”

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APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVED EXEMPTION FORM

Application for Exemption from Institutional Oversight

Unless qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, ALL LSU research/projects using living humans as subjects, or samples or data obtained from humans, directly or indirectly, with or without their consent, must be approved or exempted in advance by the LSU IRB. This Form helps the PI determine if a project may be exempted, and is used to request an exemption.



Institutional Review Board
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- Applicant, Please fill out the application in its entirety and include the completed application as well as parts A-E, listed below, when submitting to the IRB. Once the application is completed, please submit two copies of the completed application to the IRB Office or to a member of the Human Subjects Screening Committee. Members of the committee can be found at <http://www.lsu.edu/irb/screeningmembers.shtml>
- A Complete Application Includes All of the Following:
 - (A) Two copies of this completed form and two copies of parts B thru E.
 - (B) A brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts 1 & 2)
 - (C) Copies of all instruments to be used.
 - If this proposal is part of a grant proposal, include a copy of the proposal and all recruitment material.
 - (D) The consent form that you will use in the study (see part 3 for more information.)
 - (E) Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project, including students who are involved with testing or handling data, unless already on file with the IRB.
Training link: (<http://phrp.nihtraining.com/users/login.php>.)

1) Principal Investigator: Debra A. Wilkerson Rank: _____
Dept.: SHREWD Ph: 225.936.5976 E-mail: dwilke1@lsu.edu

2) Co Investigator(s): please include department, rank, phone and e-mail for each
* If student, please identify and name supervising professor in this space
Michael F. Burnett, Professor & Director
School of Human Resource Education and Workforce Development
vochur@lsu.edu
225.578.5755

3) Project Title: THE INFLUENCE OF CTE PROGRAM PARTICIPATION IN BUSINESS EDUCATION COURSES ON STANDARDIZED TEST AMONG SECONDARY STUDENTS IN LOUISIANA

4) LSU Proposal?(yes or no) No If Yes, LSU Proposal Number _____
Also, if YES, either ☐ This application completely matches the scope of work in the grant
OR ☐ More IRB Applications will be filed later

5) Subject pool (e.g. Psychology Students) High School Students
• Circle any "vulnerable populations" to be used: children <18, the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted.

6) PI Signature Debra A. Wilkerson ** Date 10/12/09 (no per signatures)
**I certify my responses are accurate and complete. If the project scope or design is later changed I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU institutions in which the study is conducted. I also understand that it is my responsibility to maintain copies of all consent forms at LSU for three years after completion of the study. If I leave LSU before that time the consent forms should be preserved in the Departmental Office.

Study Approved By: Dr. Robert C. Mathews, Chairman
Institutional Review Board
Louisiana State University
203 B-1 David Boyd Hall
225-578-8692 | www.lsu.edu/irb
Approval Expires: 10-18-2012

IRB# 4770 LSU Proposal# _____
☒ Complete Application
☒ Human Subjects Training

Screening Committee Action: Exempted ☒ Not Exempted _____ Category/Paragraph 4
Reviewer Mathews Signature Robert Mathews Date 10/18/09

APPENDIX B

DATA REQUEST TO LOUISIANA DEPARTMENT OF EDUCATION

November 2009

Louisiana Department of Education
Division of Student Standards and Assessment
Baton Rouge, LA 70802

To Whom It May Concern:

I am writing this letter as a doctoral student at Louisiana State University in the area of Human Resource Education and Workforce Development to request the dataset from the Louisiana Department of Education for the Louisiana Educational Assessment Program Graduate Exit Exam for the 2008-2009 school year. It is my intention to use this data in my dissertation, assuring anonymity, to compare career and technical education (CTE) and non-CTE students on selected academic and demographic measures included in the GEE assessment.

Complete confidentiality will be exercised to keep the identity of students and other pertinent information to ensure the privacy of all students enrolled in the public education school system in Louisiana. In addition, the Louisiana Department of Education will be duly noted as the source of information.

For more information, please feel free to e-mail me at dwilke1@tigers.lsu.edu.

Thanking you in advance.

Debra A. Wilkerson

VITA

Debra, the youngest of three, was born in Baton Rouge, Louisiana, to the union of Mr. and Mrs. Wilkerson and is a product of the East Baton Rouge Parish School System. After graduating high school, she immediately began college while maintaining a part-time job. Upon completion of her Bachelor of Science degree, she began her career as an educator. Later, she received several certifications, her master's and specialist degrees and began pursuing her doctoral degree. Debra has now been teaching for twenty years and believes in providing a meaningful learning experience for all learners.

Her philosophy is, *"It is better to have it and not need it, than to need it and not have it."*